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TITLE 327 WATER POLLUTION CONTROL BOARD

PROPOSED RULE AS PRELIMINARILY ADOPTED WITH IDEM'S SUGGESTED CHANGES INCORPORATED

LSA Document #01-348

DIGEST

On December 16, 1998, U.S. EPA published National Drinking Water Regulations for Interim Enhanced Surface Water Treatment. These regulations make changes to the Indiana surface water treatment rule as published April 12, 1993. These changes are being made to improve implementation of the rule. The intended effect of the rule is to strengthen microbial protection, including provisions specifically to address *Cryptosporidium*, and to address risk trade-offs with disinfection byproducts.

Also on December 16, 1998, U.S. EPA published National Drinking Water Regulations for Disinfectants and Disinfection Byproducts. These regulations update the 1979 regulations for total trihalomethanes. In addition, these regulations will reduce exposure to three disinfectants (chlorine, chloramine, and chlorine dioxide) and many disinfection byproducts.

On June 8, 2001, U.S. EPA published National Drinking Water Regulations for Filter Backwash Recycling. These regulations address a statutory requirement of the 1996 Safe Drinking Water Act (SDWA) Amendments to promulgate a regulation which “governs” the recycling of filter backwash water within the treatment process of public water systems. The purpose of these regulations is to further protect public health by requiring public water systems, where needed, to institute changes to the return of recycle flows to plant’s treatment process that may otherwise compromise microbial control. Indiana is required to adopt all of these revisions in order to maintain primacy (primary enforcement authority) for the Safe Drinking Water Program. Amends 327 IAC 8-2 and 327 IAC 8-2.1 and adds 327 IAC 8-2.5 and 327 IAC 8-2.6 concerning interim enhanced surface water treatment, disinfectants/disinfection byproducts, and filter backwash. Effective 30 days after filing with the secretary of state.

HISTORY

First Notice of Comment Period: October 1, 2001, Indiana Register (25 IR 206).

Second Notice of Comment Period and Notice of First Hearing: June 1, 2002, Indiana Register (25 IR 2863).

Change of Notice for First Hearing: August 1, 2002, Indiana Register (25 IR 3806).

Date of First Hearing: August 14, 2002.

Proposed Rule and Notice of Second Hearing: October 1, 2002, Indiana Register (26 IR 99).

327 IAC 8-2-1	327 IAC 8-2-30	327 IAC 8-2.1-8
327 IAC 8-2-5	327 IAC 8-2-31	327 IAC 8-2.1-16
327 IAC 8-2-5.3	327 IAC 8-2-48	327 IAC 8-2.1-17
327 IAC 8-2-8.5	327 IAC 8-2.1-3	327 IAC 8-2.5
327 IAC 8-2-13	327 IAC 8-2.1-4	327 IAC 8-2.6
327 IAC 8-2-29	327 IAC 8-2.1-6	

SECTION 1. 327 IAC 8-2-1, AS AMENDED AT 25 IR 1075, SECTION 1, IS AMENDED TO READ AS FOLLOWS:

327 IAC 8-2-1 Definitions

Authority: IC 13-13-5; IC 13-14-8-7; IC 13-14-9; IC 13-18-3; IC 13-18-16

Affected: IC 13-11-2; IC 13-18

Sec. 1. In addition to the definitions contained in IC 13-11-2 and 327 IAC 1, the following definitions apply throughout this rule, **327 IAC 8-2.1, 327 IAC 8-2.5, and 327 IAC 8-2.6:**

- (1) "Act" means the Safe Drinking Water Act (42 U.S.C. 300f et seq.).
- (2) "Action level" means the concentration of lead or copper in water specified in section 36(c) of this rule which determines, in some cases, the treatment requirements contained in sections 36 through 47 of this rule, that a water system is required to complete.
- (3) "Adjustment program" means the addition of fluoride to drinking water by a public water system for the prevention of dental cavities.
- (4) "Administrator" means the administrator of the U.S. EPA.
- (5) "Best available technology" **or** "BAT" means best technology, treatment techniques, or other means which the commissioner finds are available, after examination for efficacy under field conditions, and not solely under laboratory conditions, and after taking cost into consideration. For the purpose of setting maximum contaminant levels for synthetic organic chemicals, any BAT must be at least as effective as granular activated carbon.
- (6) "Coagulation" means a process using coagulant chemicals and mixing by which colloidal and suspended materials are destabilized and agglomerated into flocs.
- (7) "Commissioner" means the commissioner of the Indiana department of environmental management or the designated agent of the commissioner.
- (8) "Community water system" **or** "CWS" means a public water system which serves at least fifteen (15) service connections used by year-round residents or regularly serves at least twenty-five (25) year-round residents.
- (9) "Compliance cycle" means the nine (9) year calendar year cycle during which public water systems must monitor. Each compliance cycle consists of three (3) three-year compliance periods. The first calendar year cycle begins January 1, 1993, and ends December 31, 2001; the second begins January 1, 2002, and ends December 31, 2010; the third begins January 1, 2011, and ends December 31, 2019.

(10) “Compliance period” means a three (3) year calendar year period within a compliance cycle. Each compliance cycle has three (3) three-year compliance periods. Within the first compliance cycle, the first compliance period runs from January 1, 1993, to December 31, 1995; the second from January 1, 1996, to December 31, 1998; the third from January 1, 1999, to December 31, 2001. Within the second compliance cycle, the first compliance period runs from January 1, 2002, to December 31, 2004; the second from January 1, 2005, to December 31, 2007; and the third from January 1, 2008, to December 31, 2010. Within the third compliance cycle, the first compliance period runs from January 1, 2011, to December 31, 2013; the second from January 1, 2014, to December 31, 2016; and the third from January 1, 2017, to December 31, 2019.

(11) “Comprehensive performance evaluation” or “CPE” means a thorough review and analysis of a treatment plant’s performance-based capabilities and associated administrative, operation, and maintenance practices. It is conducted to identify factors that may be adversely impacting a plant’s capability to achieve compliance and emphasizes approaches that can be implemented without significant capital improvements. For purposes of compliance with 327 IAC 8-2.6-1, the comprehensive performance evaluation must consist of at least the following components:

(A) Assessment of plant performance.

(B) Evaluation of major unit processes.

(C) Identification and prioritization of performance limiting factors.

(D) Assessment of the applicability of comprehensive technical assistance.

(E) Preparation of a CPE report.

~~(11)~~ (12) “Confluent growth” means a continuous bacterial growth covering the entire filtration area of a membrane filter, or a portion thereof, in which bacterial colonies are not discrete.

~~(12)~~ (13) “Contaminant” means any micro-organisms, chemicals, waste, physical substance, radiological substance, or any wastewater introduced or found in the drinking water.

~~(13)~~ (14) “Conventional filtration treatment” means a series of processes including coagulation, flocculation, sedimentation, and filtration resulting in substantial particulate removal.

~~(14)~~ (15) “Corrosion inhibitor” means a substance capable of reducing the corrosivity of water toward metal plumbing materials, especially lead and copper, by forming a protective film on the interior surface of those materials.

~~(15)~~ (16) “CT” or “CT_{calc}” is the product of residual disinfectant concentration (C) in milligrams per liter determined before or at the first customer and the corresponding disinfectant contact time (T) in minutes, such as $C \times T$. If a public water system applies disinfectants at more than one (1) point prior to the first customer, it must determine the CT of each disinfectant sequence before or at the first customer to determine the total percent inactivation or total inactivation ratio. In determining the total inactivation ratio, the public water system must determine the residual disinfectant concentration of each disinfection sequence and corresponding contact time before any subsequent disinfection application point. CT_{99.9} is the CT value required for ninety-nine and nine-tenths percent (99.9%) (3-log) inactivation of *Giardia lamblia* cysts. CT_{99.9} for a variety of disinfectants and conditions appears in Tables 1.1-1.6, 2.1, and 3.1 of paragraph 141.74(b)(3)¹.

$$\frac{CT_{calc}}{CT_{99.9}}$$

is the inactivation ratio. The sum of the inactivation ratios or total inactivation ratio shown as:

$$j \frac{(CT_{calc})}{(CT_{99.9})}$$

is calculated by adding together the inactivation ratio for each disinfection sequence. A total inactivation ratio equal to or greater than one (1.0) is assumed to provide a 3-log inactivation of *Giardia lamblia* cysts.

~~(+6)~~ **(17)** “Diatomaceous earth filtration” means a process resulting in substantial particulate removal in which:

- (A) a precoat cake of diatomaceous earth filter media is deposited on a support membrane (septum); and
- (B) while the water is filtered by passing through the cake on the septum, additional filter media known as body feed is continuously added to the feed water to maintain the permeability of the filter cake.

~~(+7)~~ **(18)** “Direct filtration” means a series of processes, including coagulation and filtration but excluding sedimentation resulting in substantial particulate removal.

~~(+8)~~ **(19)** “Disinfectant” means any oxidant, including, but not limited to, chlorine, chlorine dioxide, chloramines, and ozone added to water in any part of the treatment or distribution process that is intended to kill or inactivate pathogenic micro-organisms.

~~(+9)~~ **(20)** “Disinfectant contact time” (T in CT calculations) means the time in minutes that it takes for water to move from the point of disinfectant application or the previous point of disinfectant residual measurement to a point before or at the point where residual disinfectant concentration (C) is measured. Where only one (1) C is measured, T is the time in minutes that it takes for water to move from the point of disinfectant application to a point before or at where C is measured. Where more than one (1) C is measured, T is:

- (A) for the first measurement of C, the time in minutes that it takes for water to move from the first or only point of disinfectant application to a point before or at the point where the first C is measured; and
- (B) for subsequent measurements of C, the time in minutes that it takes for water to move from the previous C measurement point to the C measurement point for which the particular T is being calculated.

Disinfectant contact time in pipelines must be calculated based on plug flow by dividing the internal volume of the pipe by the maximum hourly flow rate through that pipe. Disinfectant contact time within mixing basins and storage reservoirs must be determined by tracer studies or an equivalent demonstration.

~~(20)~~ **(21)** “Disinfection” means a process which inactivates pathogenic organisms in water by chemical oxidants or equivalent agents.

(22) “Disinfection profile” means a summary of daily *Giardia lamblia* inactivation through a treatment plant.

~~(24)~~ **(23)** “Domestic or other nondistribution system plumbing problem” means a coliform contamination problem in a public water system with more than one (1) service connection that

is limited to the specific service connection from which the coliform-positive sample was taken.
(22) (24) “Dose equivalent” means the product of the absorbed dose from ionizing radiation and such factors as account for differences in biological effectiveness due to the type of radiation and its distribution in the body as specified by the International Commission on Radiological Units and Measurements (ICRUM).

(23) (25) “Drinking water violation” means violations of the maximum contaminant level (MCL), treatment technique (TT), monitoring requirements, and testing procedures in this rule. 327 IAC 8-2.1-16 identifies the tier assignment for each specific violation or situation requiring a public notice.

(24) (26) “Effective corrosion inhibitor residual” means a concentration sufficient to form a passivating film on the interior walls of a pipe for the purpose of sections 36 through 47 of this rule only.

(27) **“Enhanced coagulation” means the addition of sufficient coagulant for improved removal of disinfection byproduct precursors by conventional filtration treatment.**

(28) **“Enhanced softening” means the improved removal of disinfection byproduct precursors by precipitative softening.**

(29) **“Filter profile” means a graphical representation of individual filter performance, based on continuous turbidity measurements or total particle counts versus time for an entire filter run, from startup to backwash inclusively, that includes an assessment of filter performance while another filter is being backwashed.**

(25) (30) “Filtration” means a process for removing particulate matter from water by passage through porous media.

(26) (31) “First draw sample” means a one (1) liter sample of tap water collected in accordance with section 37 of this rule, that has been standing in the plumbing pipes at least six (6) hours and is collected without flushing the tap.

(27) (32) “Flocculation” means a process to enhance agglomeration or collection of smaller floc particles into larger, more easily settleable particles through gentle stirring by hydraulic or mechanical means.

(33) **“GAC10” means granular activated carbon filter beds with an empty-bed contact time of ten (10) minutes based on average daily flow and a carbon reactivation frequency of every one hundred eighty (180) days.**

(28) (34) “Gross alpha particle activity” means the total radioactivity due to alpha particle emission as inferred from measurements on a dry sample.

(29) (35) “Gross beta particle activity” means the total radioactivity due to beta particle emission as inferred from measurements on a dry sample.

(30) (36) “Ground water under the direct influence of surface water” means any water beneath the surface of the ground with:

(A) significant occurrence of insects or other macro-organisms, algae, or large-diameter pathogens such as *Giardia lamblia* or, **for subpart H systems serving at least ten thousand (10,000) individuals only, *Cryptosporidium*; or**

(B) significant and relatively rapid shifts in water characteristics such as turbidity, temperature, conductivity, or pH which closely correlate to climatological or surface water conditions.

Direct influence must be determined for individual sources in accordance with criteria established by the commissioner. The commissioner's determination of direct influence may be based on site-specific measurements of water quality and/or documentation of well construction characteristics and geology with field evaluation.

(37) “Haloacetic acids (five)” or “HAA5” means the sum of the concentrations in milligrams per liter of the haloacetic acid compounds (monochloroacetic acid, dichloroacetic acid, trichloroacetic acid, monobromoacetic acid, and dibromoacetic acid), rounded to two (2) significant figures after addition.

~~(31)~~ **(38)** “Halogen” means one (1) of the chemical elements chlorine, bromine, or iodine.

~~(32)~~ **(39)** “Initial compliance period” means January 1993 to December 1995, for the contaminants listed in sections 4 (other than arsenic, barium, cadmium, fluoride, lead, mercury, selenium, and silver), 5, and 5.4(a) (other than benzene, vinyl chloride, carbon tetrachloride, 1,2-dichloroethane, trichloroethylene, 1,1-dichloroethylene, 1,1,1-trichloroethane, and para-dichlorobenzene) of this rule.

~~(33)~~ **(40)** “Large water system” means a water system that serves more than fifty thousand (50,000) people for the purpose of sections 36 through 47 of this rule only.

~~(34)~~ **(41)** “Lead service line” means a service line made of lead which connects the water main to the building inlet and any lead pigtail, gooseneck, or other fitting which is connected to such lead line.

~~(35)~~ **(42)** “Legionella” means a genus of bacteria, some species of which have caused a type of pneumonia called Legionnaires Disease.

~~(36)~~ **(43)** “Manmade beta particle and photon emitters” means all radionuclides emitting beta particle and/or photons listed in “Maximum Permissible Body Burdens and Maximum Permissible Concentration of Radionuclides in Air or Water for Occupational Exposure”, NBS Handbook 69, as amended August 1973, U.S. Department of Commerce, except the daughter products of thorium-232, uranium-235, and uranium-238.

~~(37)~~ **(44)** “Maximum contaminant level (MCL)” means the maximum permissible level of a contaminant in water which is delivered to the free flowing outlet of the ultimate user of a public water system, except in the case of turbidity where the maximum permissible level is measured at the point of entry to the distribution system. Contaminants added to the water under circumstances controlled by the user, except those resulting from corrosion of piping and plumbing caused by water quality, are excluded from this definition.

~~(38)~~ **(45)** “Maximum contaminant level goal (MCLG)” means the maximum level of a contaminant in drinking water at which no known or anticipated adverse effect on the health of persons would occur and which includes an adequate margin of safety. Maximum contaminant level goals are nonenforceable health goals.

(46) “Maximum residual disinfectant level” or “MRDL” means a level of a disinfectant added for water treatment that may not be exceeded at the consumer’s tap without an unacceptable possibility of adverse health effects.

(47) “Maximum residual disinfectant level goal” or “MRDLG” means the maximum level of a disinfectant added for water treatment at which no known or anticipated adverse effect on the health of individuals would occur, and which allows an adequate margin of safety.

~~(39)~~ **(48)** “Maximum total trihalomethane potential” **or** “MTP” means the maximum concentration of total trihalomethanes produced in a given water containing a disinfectant residual after seven (7) days at a temperature of twenty-five (25) degrees Celsius or above.

~~(40)~~ **(49)** “Medium size water system” means a water system that serves greater than three thousand three hundred (3,300) and less than or equal to fifty thousand (50,000) persons for the purpose of sections 36 through 47 of this rule only.

~~(41)~~ **(50)** “Near the first service connection” means at one (1) of the twenty percent (20%) of all service connections in the entire system that are nearest the water supply treatment facility, as measured by water transport time within the distribution system.

~~(42)~~ **(51)** “Noncommunity water system” means a public water system which has at least fifteen (15) service connections used by nonresidents or which regularly serves twenty-five (25) or more nonresident individuals daily for at least sixty (60) days per year.

~~(43)~~ **(52)** “Nontransient noncommunity water system” **or** “NTNCWS” means a public water system that is not a community water system which regularly serves the same twenty-five (25) or more persons at least six (6) months per year.

~~(44)~~ **(53)** “Optimal corrosion control treatment” means the corrosion control treatment that minimizes the lead and copper concentrations at users’ taps while ensuring that the treatment does not cause the water system to violate any national primary drinking water regulations for the purpose of sections 36 through 47 of this rule only.

~~(45)~~ **(54)** “Performance evaluation sample” means a reference sample provided to a laboratory for the purpose of demonstrating that the laboratory can successfully analyze the sample within limits of performance specified by the administrator. The true value of the concentration of the reference material is unknown to the laboratory at the time of the analysis.

~~(46)~~ **(55)** “Pecuri (pCi)” means the quantity of radioactive material producing two and twenty-two hundredths (2.22) nuclear transformations per minute.

~~(47)~~ **(56)** “Point of disinfectant application” is the point where the disinfectant is applied and water downstream of that point is not subject to recontamination by surface water run-off.

~~(48)~~ **(57)** “Point-of-entry treatment device” **or** “POE” is a treatment device applied to the drinking water entering a house or building for the purpose of reducing contaminants in drinking water distributed throughout the house or building.

~~(49)~~ **(58)** “Point-of-use treatment device” **or** “POU” is a treatment device to a single tap used for the purpose of reducing contaminants in drinking water at that one (1) tap.

~~(50)~~ **(59)** “Primacy agency” is the department of environmental management where the department exercise primary enforcement responsibility as granted by EPA.

~~(51)~~ **(60)** “Public water system” means a public water supply for the provision to the public of water for human consumption through pipes or other constructed conveyances, if such system has at least fifteen (15) service connections or regularly serves at least twenty-five (25) individuals daily at least sixty (60) days out of the year. “Public water system” includes any collection, treatment, storage, and distribution facilities under control of the operator of such system, and used primarily in connection with such system and any collection or pretreatment storage facilities not under such control that are used primarily in connection with such system. A public water system is either a community water system or a noncommunity water system, as defined in subdivisions (8) and ~~(42)~~: **(51)**.

~~(52)~~ **(61)** “Rem” means the unit of dose equivalent from ionizing radiation to the total body or any internal organ or organ system. A millirem (mrem) is one-thousandth (1/1,000) of a rem.

~~(53)~~ **(62)** “Repeat compliance period” means any subsequent compliance period after the initial compliance period.

~~(54)~~ **(63)** “Residual disinfectant concentration”(C in CT calculations) means the concentration of disinfectant measured in milligrams per liter in a representative sample of water.

~~(55)~~ **(64)** “Sanitary survey” means an on-site inspection of the water source, facilities, equipment, construction, and operation and maintenance of a public water system for the purpose of evaluating the adequacy of such source, facilities, equipment, construction, and operation and maintenance for producing and distributing safe drinking water.

~~(56)~~ **(65)** “Sedimentation” means a process for removal of solids before filtration by gravity or separation.

~~(57)~~ **(66)** “Service line sample” means a one (1) liter sample of water collected in accordance with section 37(b)(3) of this rule that has been standing at least six (6) hours in a service line.

~~(58)~~ **(67)** “Single family structure” means a building constructed as a single family residence that is currently being used as either a residence or a place of business for the purpose of sections 36 through 47 of this rule only.

~~(59)~~ **(68)** “Slow sand filtration” means a process involving passage of raw water through a bed of sand at low velocity (generally less than four-tenths (0.4) meter per hour or forty-five (45) to one hundred fifty (150) gallons per day per square foot) resulting in substantial particulate removal by physical and biological mechanisms.

~~(60)~~ **(69)** “Small water system” means a water system that serves three thousand three hundred (3,300) persons or fewer for the purpose of sections 36 through 47 of this rule only.

~~(61)~~ **(70)** “Standard sample” means the aliquot of finished drinking water that is examined for the presence of coliform bacteria.

(71) “Subpart H system” means a public water system using surface water or ground water under the direct influence of surface water as a source that is subject to the requirements of 327 IAC 8-2.6-1.

~~(62)~~ **(72)** “Supplier of water” means any person who owns and/or operates a public water system.

~~(63)~~ **(73)** “Surface water” means all water occurring on the surface of the ground, including water in a stream, natural and artificial lakes, ponds, swales, marshes, and diffused surface water.

(74) “SUVA” means specific ultraviolet absorption at two hundred fifty-four (254) nanometers, an indicator of the humic content of water. It is a calculated parameter obtained by dividing a sample’s ultraviolet absorption at a wavelength of two hundred fifty-four (254) nanometers (UV₂₅₄) (in m⁻¹) by its concentration of dissolved organic carbon (DOC) (in milligrams per liter).

~~(64)~~ **(75)** “System with a single service connection” means a public water system which supplies drinking water to consumers via a single service line.

~~(65)~~ **(76)** “Too numerous to count” means that the total number of bacterial colonies exceeds two hundred (200) on a forty-seven (47) millimeter diameter membrane filter used for coliform detection.

(77) **“Total organic carbon” or “TOC” means total organic carbon in milligrams per liter, measured using heat, oxygen, ultraviolet irradiation, chemical oxidants, or combinations of these oxidants that convert organic carbon to carbon dioxide, rounded to two (2) significant figures.**

~~(66)~~ (78) **“Total trihalomethanes” or “TTHM” means the sum of the concentration in milligrams per liter of the trihalomethane compounds:**

- (A) trichloromethane (chloroform);
- (B) dibromochloromethane;
- (C) bromodichloromethane; and
- (D) tribromomethane (bromoform);

rounded to two (2) significant figures.

~~(67)~~ (79) **“Transient noncommunity water system” or “TWS” means a noncommunity water system that does not regularly serve at least twenty-five (25) of the same persons over six (6) months per year.**

~~(68)~~ (80) **“Trihalomethane” or “THM” means one (1) of the family of organic compounds, named as derivatives of methane, wherein three (3) of the four (4) hydrogen atoms in methane are each substituted by a halogen atom in the molecular structure.**

(81) “Uncovered finished water storage facility” means a tank, reservoir, or other facility open to the atmosphere that is used to store water that will undergo no further treatment except residual disinfection.

~~(69)~~ (82) **“U.S. EPA” or “EPA” means the United States Environmental Protection Agency.**

~~(70)~~ (83) **“Virus” means a virus of fecal origin which is infectious to humans by waterborne transmission.**

~~(71)~~ (84) **“Waterborne disease outbreak” means the significant occurrence of acute infectious illness epidemiologically associated with the ingestion of water from a public water system which is deficient in treatment as determined by the commissioner.**

¹Federal Register, Part II, 40 CFR 141, June 29, 1989, Volume 54, Number 124, pages 27532 through 27534. (*Water Pollution Control Board; 327 IAC 8-2-1; filed Sep 24, 1987, 3:00 p.m.: 11 IR 705; filed Dec 28, 1990, 5:10 p.m.: 14 IR 1003; errata filed Jan 9, 1991, 2:30 p.m.: 14 IR 1070; errata filed Aug 6, 1991, 3:45 p.m.: 14 IR 2258; filed Apr 12, 1993, 11:00 a.m.: 16 IR 2151; filed Aug 24, 1994, 8:15 a.m.: 18 IR 19; errata filed Oct 11, 1994, 2:45 p.m.: 18 IR 531; filed Oct 24, 1997, 4:30 p.m.: 21 IR 932; filed Mar 6, 2000, 7:56 a.m.: 23 IR 1623; filed Nov 20, 2001, 10:20 a.m.: 25 IR 1075*)

SECTION 2. 327 IAC 8-2-5 IS AMENDED TO READ AS FOLLOWS:

327 IAC 8-2-5 Organic chemicals other than volatile compounds; maximum contaminant levels

Authority: IC 13-13-5; IC 13-14-8-7; IC 13-14-9; IC 13-18-3; IC 13-18-16

Affected: IC 13-18

Sec. 5. (a) The MCLs for the following synthetic organic chemicals apply to all community water systems and nontransient noncommunity water systems, except as provided in subsection (c) for

total trihalomethanes:

<u>Contaminant</u>	<u>Level in Milligrams Per Liter</u>
Total trihalomethanes (the sum of the concentrations of bromodichloromethane, dibromochloromethane, tribromomethane (bromoform), and trichloromethane (chloroform))	0.10

<u>CAS No.</u>	<u>Contaminant</u>	<u>MCL (mg/l)</u>
15972-60-8	Alachlor	0.002
1912-24-9	Atrazine	0.003
50-32-8	Benzo[a]pyrene	0.0002
1563-66-2	Carbofuran	0.04
57-74-9	Chlordane	0.002
75-99-0	Dalapon	0.2
96-12-8	1,2-dibromo-3-chloropropane (DBCP)	0.0002
103-23-1	Di(2-ethylhexyl)adipate	0.4
117-81-7	Di(2-ethylhexyl)phthalate	0.006
88-85-7	Dinoseb	0.007
85-00-7	Diquat	0.02
94-75-7	2,4-D	0.07
145-73-3	Endothall	0.1
72-20-8	Endrin	0.002
106-93-4	Ethylene dibromide	0.00005
1071-53-6	Glyphosate	0.7
76-44-8	Heptachlor	0.0004
1024-57-3	Heptachlor epoxide	0.0002
118-74-1	Hexachlorobenzene	0.001
77-47-4	Hexachlorocyclopentadiene	0.05
58-89-9	Lindane	0.0002
72-43-5	Methoxychlor	0.04
23135-22-0	Oxamyl (vydate)	0.2
1918-02-1	Picloram	0.5
1336-36-3	Polychlorinated biphenyls	0.0005
87-86-5	Pentachlorophenol	0.001
122-34-9	Simazine	0.004

8001-35-2	Toxaphene	0.003
1746-01-6	2,3,7,8-TCDD (dioxin)	3×10^{-8}
93-72-1	2,4,5-TP	0.05

(b) For the synthetic organic chemicals listed in this section other than total trihalomethanes, monitoring frequency is specified in section 5.1 of this rule, and analytical methods are specified in section 5.2 of this rule.

(c) The MCL of **one-tenth (0.10) milligram per liter** for total trihalomethanes ~~listed in this section~~ applies ~~only to~~ **as follows:**

(1) A subpart H community water systems system which ~~serve~~ **serves** a population of ten thousand (10,000) or more individuals ~~and which add a disinfectant (oxidant) to the water in any part of the drinking water treatment process.~~ **until December 31, 2001.**

(2) A CWS that uses only ground water not under the direct influence of surface water and serve a population of ten thousand (10,000) or more individuals until December 31, 2003.

Compliance with the MCL for total trihalomethanes is calculated under section 5.3 of this rule. **After December 31, 2003, this subsection is no longer applicable.**

(d) The commissioner hereby identifies, as indicated in the following table, granular activated carbon (GAC), packed tower aeration (PTA), or oxidation (OX) as the best technology, treatment technique, or other means available for achieving compliance with the MCL for synthetic organic contaminants identified in subsection (a):

BAT for Synthetic Organic Contaminants				
Listed in Subsection (a)				
CAS No.	Contaminant	GAC	PTA	OX
15972-60-8	Alachlor	X		
1912-24-9	Atrazine	X		
50-32-8	Benzo[a]pyrene	X		
1563-66-2	Carbofuran	X		
57-74-9	Chlordane	X		
94-75-7	2,4-D	X		
75-99-0	Dalapon	X		
96-12-8	1,2-dibromo-3-chloropropane (DBCP)	X	X	
103-23-1	Di(2-ethylhexyl)adipate	X	X	
117-81-7	Di(2-ethylhexyl)phthalate	X		
88-85-7	Dinoseb	X		
85-00-7	Diquat	X		
145-73-3	Endothall	X		
72-20-8	Endrin	X		
106-93-4	Ethylene dibromide (EDB)	X	X	

1071-53-6	Glyphosate			X
76-44-8	Heptachlor	X		
1024-57-3	Heptachlor epoxide	X		
118-74-1	Hexachlorobenzene	X		
77-47-3	Hexachlorocyclopentadiene	X	X	
58-89-9	Lindane	X		
72-43-5	Methoxychlor	X		
23135-22-0	Oxamyl (vydate)	X		
1918-02-1	Picloram	X		
1336-36-3	Polychlorinated biphenyls (PCBs)	X		
87-86-5	Pentachlorophenol	X		
93-72-1	2,4,5-TP (silvex)	X		
122-34-9	Simazine	X		
1746-01-6	2,3,7,8-TCDD (dioxin)	X		
8001-35-2	Toxaphene	X	X	

(Water Pollution Control Board; 327 IAC 8-2-5; filed Sep 24, 1987, 3:00 p.m.: 11 IR 706; filed Dec 28, 1990, 5:10 p.m.: 14 IR 1009; errata filed Aug 6, 1991, 3:45 p.m.: 14 IR 2258; filed Aug 24, 1994, 8:15 a.m.: 18 IR 32; errata filed Oct 11, 1994, 2:45 p.m.: 18 IR 531; filed Aug 25, 1997, 8:00 a.m.: 21 IR 43)

SECTION 3. 327 IAC 8-2-5.3, AS AMENDED AT 25 IR 1086, SECTION 6, IS AMENDED TO READ AS FOLLOWS:

327 IAC 8-2-5.3 Collection of samples for total trihalomethanes testing; community water systems

Authority: IC 13-13-5; IC 13-14-8-7; IC 13-14-9; IC 13-18-3; IC 13-18-16

Affected: IC 13-11-2; IC 13-14-8; IC 13-18-1; IC 13-18-2

Sec. 5.3. (a) To determine compliance with section 5 of this rule, each community water system which serves ten thousand (10,000) or more individuals and which adds a disinfectant (oxidant) to the water in any part of the drinking water treatment process shall collect and analyze samples for total trihalomethanes (TTHM) in accordance with this section. The minimum number of samples required to be taken by the system shall be based on the number of treatment plants used by the system, except that multiple wells drawing raw water from a single aquifer may, with the commissioner's approval, be considered one (1) treatment plant for determining the minimum number of samples. All samples taken within an established frequency shall be collected within a twenty-four (24) hour period.

(b) The requirements of subsection (a) apply as follows:

(1) Community water systems which utilize surface water sources in whole or in part, and community water systems which utilize only ground water sources and which have not been determined by the commissioner to qualify for the monitoring requirements of subsection (c)

shall analyze for TTHM at quarterly intervals on at least four (4) water samples for each treatment plant used by the system. At least twenty-five percent (25%) of the samples shall be taken at locations within the distribution system reflecting the maximum residence time of the water in the system. The remaining seventy-five percent (75%) shall be taken at representative locations in the distribution system, taking into account number of persons served, different sources of water, and different treatment methods employed. The results of all analyses per quarter shall be arithmetically averaged and reported to the commissioner within thirty (30) days of the system's receipt of such results. All samples collected shall be used in the computation of the average, unless the analytical results are invalidated for technical reasons. Sampling and analyses shall be conducted in accordance with the methods listed in subsection (e).

(2) Upon the written request of a community water system, the monitoring frequency required by subdivision (1) may be reduced by the commissioner to a minimum of one (1) sample analyzed for TTHM per quarter taken at a point in the distribution system reflecting the maximum residence time of the water in the system. Upon a written determination by the commissioner that the data from at least one (1) year of monitoring in accordance with subdivision (1) and local conditions demonstrate that TTHM concentrations will be consistently below the MCL.

(3) If, at any time during which the reduced monitoring frequency prescribed under this section applies, the results from any analysis exceed ten-hundredths (0.10) milligram per liter of TTHM and such results are confirmed by at least one (1) check sample taken promptly after such results are received, or if the system makes any significant change to its source of water or treatment program, the system shall immediately begin monitoring in accordance with the requirements of subdivision (1) which monitoring shall continue for at least one (1) year before the frequency may be reduced again. At the discretion of the commissioner, a system's monitoring frequency shall be increased above the minimum in those cases where it is necessary to detect variations of TTHM levels within the distribution system.

(c) Monitoring frequency required by this section may only be reduced as follows:

(1) Upon written request to the commissioner, a community water system utilizing only ground water sources may seek to have the monitoring frequency required by subsection (a) reduced to a minimum of one (1) sample for maximum TTHM potential per year for each treatment plant used by the system taken at a point in the distribution system reflecting maximum residence time of the water in the system. The system shall submit, to the commissioner, the results of at least one (1) sample analyzed for maximum TTHM potential using the procedure specified in subsection (g). A sample must be analyzed from each treatment plant used by the system and be taken at a point in the distribution system reflecting the maximum residence time of the water in the system. The system's monitoring frequency may only be reduced upon a written determination by the commissioner that, based upon the data submitted by the system, the system has a maximum TTHM potential of less than ten-hundredths (0.10) milligram per liter and that, based upon an assessment of the local condition of the system, the system is not likely to approach or exceed the MCL for total TTHMs. The results of all analyses shall be reported to the commissioner within thirty (30) days of the system's receipt of such results. All

samples collected shall be used for determining whether the system must comply with the monitoring requirements of subsection (a) unless the analytical results are invalidated for technical reasons. Sampling and analyses shall be conducted in accordance with the methods listed in subsection (e).

(2) If, at any time during which the reduced monitoring frequency prescribed under subdivision (1) applies, the results from any analysis taken by the system for maximum TTHM potential are equal to or greater than ten-hundredths (0.10) milligram per liter, and such results are confirmed by at least one (1) check sample taken promptly after such results are received, the system shall immediately begin monitoring in accordance with the requirements of subsection (b) and such monitoring shall continue for at least one (1) year before the frequency may be reduced again. In the event of any significant change to the system's source of water or treatment program, the system shall immediately analyze an additional sample for maximum TTHM potential taken at a point in the distribution system reflecting maximum residence time of the water in the system for the purpose of determining whether the system must comply with monitoring requirements of subsection (b). At the discretion of the commissioner, monitoring frequencies may and should be increased above the minimum in those cases where this is necessary to detect variation of TTHM levels within the distribution system.

(d) Compliance with section 5 of this rule for TTHM shall be determined based on a running annual average of quarterly samples collected by the system as prescribed in subsection (b)(1) or (b)(2). If the average of samples covering any four (4) consecutive quarterly periods exceeds the MCL, the supplier of water shall report to the commissioner under section 13 of this rule and notify the public under 327 IAC 8-2.1-7 through 327 IAC 8-2.1-16. Monitoring after public notification shall be at a frequency designated by the commissioner and shall continue until a monitoring schedule as a condition to an enforcement action shall become effective.

(e) Samples for TTHM shall be dechlorinated upon collection to prevent further production of trihalomethanes according to the procedures described in the methods, except acidification is not required if only TTHMs or THMs are to be determined. Samples for maximum TTHM potential should not be dechlorinated and should be held for seven (7) days at twenty-five (25) degrees Celsius or above prior to analysis. Analyses made under this section shall be conducted by one (1) of the following U.S. EPA approved methods:

- (1) Method 502.2, Rev 2.1*.
- (2) Method 524.2*.
- (3) Method 551.1*.

(f) Before a community water system makes any significant modifications to its existing treatment process for the purpose of achieving compliance with the MCL established in section 5(a) of this rule, such system must submit and obtain the commissioner's approval of a detailed plan setting forth its proposed modification and those safeguards that it will implement to ensure that the bacteriological quality of the drinking water served by such system will not be adversely affected by such modification. Each system shall comply with the provisions set forth in the approved plan. At a minimum, a plan approved by the commissioner shall require the system modifying its disinfection

practice to do the following:

- (1) Evaluate the water system for sanitary defects and evaluate the source water for biological quality.
- (2) Evaluate its existing treatment practices and consider improvements that will minimize disinfectant demand and optimize finished water quality throughout the distribution system.
- (3) Provide baseline water quality survey data of the distribution system. Such data should include the results from monitoring for coliform and fecal coliform bacterial, fecal streptococci, standard plate counts at thirty-five (35) degrees Celsius and twenty (20) degrees Celsius, phosphate, ammonia nitrogen, and total organic carbon. Virus studies should be required where source waters are heavily contaminated with sewage effluent.
- (4) Conduct additional monitoring to assure continued maintenance of optimal biological quality in finished water, for example, when chloramines are introduced as disinfectants or when prechlorination is being discontinued. Additional monitoring may also be required by the commissioner for chlorate, chlorite, and chlorine dioxide when chlorine dioxide is used. Standard plate count analysis may also be required by the commissioner as appropriate before and after any modifications.
- (5) Consider inclusion in the plan provisions to maintain an active disinfectant residual throughout the distribution system at all times during and after modification.

(g) The water sample for determination of maximum trihalomethane potential is taken from a point in the distribution system that reflects maximum residence time. Procedures for sample collection and handling are given in the methods. No reducing agent is added to quench the chemical reaction producing THMs at the time of sample collection. The intent is to permit the levels of THM precursors to be depleted and the concentration of THMs to be maximized for the supply to be tested. Four (4) experimental parameters affecting maximum THM production are pH, temperature, reaction time, and the presence of a disinfectant residual. These parameters are dealt with as follows:

- (1) Measure the disinfectant residual at the selected sampling point. Proceed only if a measurable disinfectant residual is present.
- (2) Collect triplicate forty (40) milliliter water samples at the pH prevailing at the time of sampling and prepare a method blank according to the methods.
- (3) Seal and store these samples together for seven (7) days at twenty-five (25) degrees Celsius or above.
- (4) After this time period, open one (1) of the sample containers and check for disinfectant residual. Absence of a disinfectant residual invalidates the sample for further analysis. Once a disinfectant residual has been demonstrated, open another of the sealed samples and determine total THM concentration using a method specified in subsection (e).

(h) The requirements in subsections (a) through (g) apply to each subpart H CWS which that serves a population of ten thousand (10,000) or more individuals until December 31, 2001. The requirements in subsections (a) through (g) apply to each CWS which that uses only ground water not under the direct influence of surface water that add a disinfectant (oxidant) in any part of the treatment process and serves a population of ten thousand (10,000) or more individuals until December 31, 2003. After the ~~above~~ dates established in

this subsection expire, the requirements of 327 IAC 8-2.5 apply to these systems.

*The methods referenced in this section may be obtained as follows:

(1) Method 502.2, Rev 2.1 may be found in "Methods for the Determination of Organic Compounds in Drinking Water, Supplement III", EPA/600/R-95-131, August 1995, available from NTIS, PB95-261616, U.S. Department of Commerce, 5285 Port Royal Road, Springfield, Virginia 22161, (800) 553-6847.

(2) Method 551.1 may be found in "Methods for the Determination of Organic Compounds in Drinking Water) Supplement III", EPA/600/R-95-131, August 1995, available from NTIS, PB95-261616, U.S. Department of Commerce, 5285 Port Royal Road, Springfield, Virginia 22161, (800) 553-6847.

(3) Method 524.2 may be found in "Methods for the Determination of Organic Compounds in Drinking Water) Supplement II", EPA-600/R-92-129, August 1992, available from NTIS, PB92-207703, U.S. Department of Commerce, 5285 Port Royal Road, Springfield, Virginia 22161, (800) 553-6847.

These methods are available for copying at the Indiana Department of Environmental Management, Office of Water Quality, 100 North Senate Avenue, Room 1255, Indianapolis, Indiana 46206. (*Water Pollution Control Board; 327 IAC 8-2-5.3; filed Dec 28, 1990, 5:10 p.m.: 14 IR 1011; filed Aug 24, 1994, 8:15 a.m.: 18 IR 37; errata filed Oct 11, 1994, 2:45 p.m.: 18 IR 531; filed Aug 25, 1997, 8:00 a.m.: 21 IR 49; errata filed Dec 10, 1997, 3:45 p.m.: 21 IR 1348; filed Jul 23, 2001, 1:02 p.m.: 24 IR 3958; filed Nov 20, 2001, 10:20 a.m.: 25 IR 1086*)

SECTION 4 . 327 IAC 8-2-8.5 IS AMENDED TO READ AS FOLLOWS:

327 IAC 8-2-8.5 Requirement for filtration and disinfection

Authority: IC 13-13-5-1; IC 13-14-8-2; IC 13-14-8-7; IC 13-18-3-2

Affected: IC 13-12-3-1; IC 13-13-5-2; IC 13-14-9; IC 13-18-11

Sec. 8.5. (a) Effective June 29, 1993, a public water system that uses a surface water source must provide filtration in accordance with this section.

(b) A public water system that uses a ground water source under the direct influence of surface water shall provide filtration in accordance with this section beginning eighteen (18) months after the commissioner determines that it is under the direct influence of surface water from the date specified in section 8.2 of this rule.

(c) A public water system that uses a surface water source or a ground water source under the direct influence of surface water must provide treatment consisting of both disinfection, as specified in section 8.6 of this rule and filtration treatment. Filtration treatment shall be done by one (1) of the following techniques, and the turbidity level of representative samples of a system's filtered water, regardless of filtration technique used, shall at no time exceed five (5) nephelometric turbidity units (NTU) in any given sample, measured as specified in section 8.7 of this rule:

(1) For systems using conventional filtration or direct filtration, the turbidity level of

representative samples of a system's filtered water must be less than or equal to one-half (0.5) NTU in at least ninety-five percent (95%) of the total number of measurements taken each month, measured as specified in sections 8.7(4) and 8.8(b) of this rule, except that if the commissioner determines that the system is capable of achieving at least ninety-nine and nine-tenths percent (99.9%) removal and/or inactivation of *Giardia lamblia* cysts at some turbidity level higher than one-half (0.5) NTU in at least ninety-five percent (95%) of the total number of measurements taken each month, the commissioner may substitute this higher turbidity limit for that system. However, in no case may the commissioner approve a turbidity limit that allows more than one (1) NTU in more than five percent (5%) of the samples taken each month, measured as specified in sections 8.7(4) and 8.8(b) of this rule. **Upon the effective date of this rule, systems serving a population of at least ten thousand (10,000) individuals shall meet the turbidity requirements in 327 IAC 8-2.6-3.**

(2) For systems using slow sand filtration, the turbidity level of representative samples of a system's filtered water must be less than or equal to one (1) NTU in at least ninety-five percent (95%) of the measurements taken each month, measured as specified in sections 8.7(4) and 8.8(b) of this rule, except where the commissioner determines that there is no significant interference with disinfection at a higher turbidity level.

(3) For systems using diatomaceous earth filtration, the turbidity level of representative samples of a public water system's filtered water must be less than or equal to one (1) NTU in at least ninety-five percent (95%) of the measurements taken each month, measured as specified in sections 8.7(4) and 8.8(b) of this rule.

(4) A public water system may use a filtration technology not listed in this subsection if it demonstrates to the commissioner, using pilot plant studies or other means, that the alternative filtration technology, in combination with disinfection treatment that meets the requirements of section 8.6 of this rule, consistently achieves ninety-nine and nine-tenths percent (99.9%) removal and/or inactivation of *Giardia lamblia* cysts and ninety-nine and ninety-nine hundredths percent (99.99%) removal and/or inactivation of viruses. For a system that makes this demonstration, the requirements of this subsection apply. **Upon the effective date of this rule, systems serving a population of at least ten thousand (10,000) individuals shall meet the requirements for other filtration technologies in 327 IAC 8-2.6-3.**

(d) During plant operation, each public water system subject to this section shall be operated only by personnel who have been certified by the commissioner under 327 IAC 8-11 through 327 IAC 8-12.

(e) In addition to complying with requirements in this section, systems serving a population of at least ten thousand (10,000) individuals shall also comply with the requirements in 327 IAC 8-2.6-1. *(Water Pollution Control Board; 327 IAC 8-2-8.5; filed Dec 28, 1990, 5:10 p.m.: 14 IR 1024; errata filed Apr 5, 1991, 3:30 p.m.: 14 IR 1626; errata, 14 IR 1730; filed Apr 12, 1993, 11:00 a.m.: 16 IR 2160)*

SECTION 5. 327 IAC 8-2-13, AS AMENDED AT 25 IR 1096, SECTION 11, IS AMENDED TO READ AS FOLLOWS:

327 IAC 8-2-13 Reporting requirements; test results and failure to comply

Authority: IC 13-13-5; IC 13-14-8-7; IC 13-14-9; IC 13-18-3; IC 13-18-16

Affected: IC 13-18

Sec. 13. (a) Except where a shorter period is specified in this rule, the supplier of water or the certified laboratory, **as certified by the commissioner**, provided the supplier of water has granted permission in writing to the laboratory using forms provided by the commissioner, and that permission is on file with the commissioner, shall report to the commissioner the results of any test measurement or analysis required by this rule within:

- (1) the first ten (10) days following the month in which the result is received; or
- (2) the first ten (10) days following the end of the required monitoring period as stipulated by the commissioner, whichever is shorter.

(b) The supplier of water or the certified laboratory, **as certified by the commissioner**, provided the supplier of water has granted permission in writing to the laboratory using forms provided by the commissioner, and that permission is on file with the commissioner, shall report to the commissioner within forty-eight (48) hours of completion of laboratory analysis the failure to comply with any MCL and any other requirement set forth in this rule by telephone or the methods specified in subsection (e). If notification is made by telephone, the results must follow using one (1) of the methods specified in subsection (e) within forty-eight (48) hours of the telephone notification.

(c) The supplier of water or the certified laboratory, **as certified by the commissioner**, provided the supplier of water has granted permission in writing to the laboratory using forms provided by the commissioner, and that permission is on file with the commissioner, shall report to the commissioner within (48) hours of completion of laboratory analysis any positive total coliform results by telephone or the methods specified in subsection (e). If notification is made by telephone, the results must follow using one (1) of the methods specified in subsection (e) within forty-eight (48) hours of the telephone notification.

(d) The supplier of water, within ten (10) days of completing the public notification required by 327 IAC 8-2.1-7 through 327 IAC 8-2.1-16, for the initial public notice and any repeat notices, shall submit to the commissioner a certification that it has fully complied with the public notification regulations. The public water system must include with this certification a representative copy of each type of notice distributed, published, posted, or made available to the persons served by the system or to the media.

(e) The submittal of the information required under this section shall be submitted in one (1) of the following manners:

- (1) Mail.
- (2) Facsimile.
- (3) Electronic mail.
- (4) Hand delivery.

(5) Other means determined by the commissioner to provide the degree of confidentiality, reliability, convenience, and security appropriate to the information to be submitted.

(Water Pollution Control Board; 327 IAC 8-2-13; filed Dec 28, 1990, 5:10 p.m.: 14 IR 1030; filed Jul 23, 2001, 1:02 p.m.: 24 IR 3974; filed Nov 20, 2001, 10:20 a.m.: 25 IR 1096; errata filed Feb 22, 2002, 2:01 p.m.: 25 IR 2254)

SECTION 6. 327 IAC 8-2-30 IS AMENDED TO READ AS FOLLOWS:

327 IAC 8-2-30 Maximum contaminant level goals; organic compounds

Authority: IC 13-13-5-1; IC 13-14-8-2; IC 13-14-8-7; IC 13-18-3-2

Affected: IC 13-12-3-1; IC 13-13-5-2; IC 13-14-9; IC 13-18-11

Sec. 30. (a) MCLGs are zero (0) for the following organic compounds:

- (1) Benzene.
- (2) Vinyl chloride.
- (3) Carbon tetrachloride.
- (4) 1,2-dichloroethane.
- (5) Trichloroethylene.
- (6) Acrylamide.
- (7) Alachlor.
- (8) Chlordane.
- (9) Dibromochloropropane.
- (10) 1,2-dichloropropane.
- (11) Epichlorohydrin.
- (12) Ethylene dibromide.
- (13) Heptachlor.
- (14) Heptachlor epoxide.
- (15) Pentachlorophenol.
- (16) Polychlorinated biphenyls (PCBs).
- (17) Tetrachloroethylene.
- (18) Toxaphene.
- (19) Benzo[a]pyrene.
- (20) Dichloromethane.
- (21) Di(2-ethylhexyl)phthalate.
- (22) Hexachlorobenzene.
- (23) 2,3,7,8-TCDD (dioxin).

(b) MCLGs for the following organic compounds are as follows:

<u>Contaminant</u>	<u>MCLG in Milligrams</u> <u>Per Liter</u>
1,1-dichloroethylene	0.007
1,1,1-trichloroethane	0.20
para-dichlorobenzene	0.075

Aldicarb	0.001
Aldicarb sulfoxide	0.001
Aldicarb sulfone	0.001
Atrazine	0.003
Carbofuran	0.04
Ortho-dichlorobenzene	0.6
cis-1,2-dichloroethylene	0.07
trans-1,2-dichloroethylene	0.1
2,4-D	0.07
Ethylbenzene	0.7
Lindane	0.0002
Methoxychlor	0.04
Monochlorobenzene	0.1
Styrene	0.1
Toluene	1
2,4,5-TP	0.05
Xylenes	10
Dalapon	0.2
Di(2-ethylhexyl)adipate	0.4
Dinoseb	0.007
Diquat	0.02
Endothall	0.1
Endrin	0.002
Glyphosate	0.7
Hexachlorocyclopentadiene	0.05
Oxamyl (vydate)	0.2
Picloram	0.5
Simazine	0.004
1,2,4-trichlorobenzene	0.07
1,1,2-trichloroethane	0.003

(c) MCLGs for the following disinfection byproducts are as follows:

<u>Disinfection Byproduct</u>	<u>MCLG (mg/L)</u>
Bromodichloromethane	0
Bromoform	0
Bromate	0
Dichloroacetic acid	0

Trichloroacetic acid	0.3
Chlorite	0.8
Dibromochloromethane	0.06

(Water Pollution Control Board; 327 IAC 8-2-30; filed Dec 28, 1990, 5:10 p.m.: 14 IR 1047; filed Aug 24, 1994, 8:15 a.m.: 18 IR 66)

SECTION 7. 327 IAC 8-2-31 IS AMENDED TO READ AS FOLLOWS:

327 IAC 8-2-31 Maximum contaminant level goals; microbiological contaminants

Authority: IC 13-13-5-1; IC 13-14-8-2; IC 13-14-8-7; IC 13-18-3-2

Affected: IC 13-12-3-1; IC 13-13-5-2; IC 13-14-9; IC 13-18-11

Sec. 31. Maximum contaminant level goals (MCLGs) are zero (0) for the following microbiological contaminants:

- (1) *Giardia lamblia*.
- (2) Viruses.
- (3) *Legionella*.
- (4) Total coliforms (including fecal coliforms and *Escherichia coli*).
- (5) *Cryptosporidium*.**

(Water Pollution Control Board; 327 IAC 8-2-31; filed Dec 28, 1990, 5:10 p.m.: 14 IR 1047)

SECTION 8. 327 IAC 8-2-48 IS ADDED TO READ AS FOLLOWS:

327 IAC 8-2-48 Monitoring of consecutive public water systems

Authority: IC 13-13-5-1; IC 13-14-8-7; IC 13-14-9; IC 13-18-3-2; IC 13-18-16-7

Affected: IC 13-11-2; IC 13-18-1; IC 13-18-2

Sec. 48. When a public water system supplies water to one (1) or more other public water systems, the commissioner may modify the monitoring requirements imposed by this article to the extent that the interconnection of the systems justifies treating them as a single system for monitoring purposes. Any modified monitoring shall be conducted pursuant to a schedule specified by the commissioner and concurred by the administrator of the U.S. EPA.
(Water Pollution Control Board; 327 IAC 8-2-48)

SECTION 9. 327 IAC 8-2.1-3, AS AMENDED AT 25 IR 1098, SECTION 14, IS AMENDED TO READ AS FOLLOWS:

327 IAC 8-2.1-3 Content of the reports

Authority: IC 13-13-5-1; IC 13-13-5-2; IC 13-18-16-6; IC 13-18-16-7; IC 13-18-16-9

Affected: IC 13-18-16

Sec. 3. (a) A community water system shall provide to its customers an annual report that contains the information specified in this section and section 4 of this rule.

(b) The report must contain information on the source of the water delivered, including the following:

(1) The source or sources of water delivered by the community water system by including information on:

(A) the type of water, such as surface water or ground water; and

(B) the commonly used name, if any, and location of the body or bodies of water.

(2) If a source water assessment has been completed, the report must notify the consumers of the availability of this information and the means to obtain it. In addition, systems are encouraged to highlight in the report significant sources of contamination in the source water area if they have readily available information. Where a system has received a source water assessment from the commissioner, the report must include a brief summary of the system's susceptibility to potential sources of contamination, using language provided by the commissioner or written by the operator.

(c) The report must include the following definitions:

(1) "Maximum contaminant level goal" or "MCLG" means the level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

(2) "Maximum contaminant level" or "MCL" means the highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

(d) A report that contains data on contaminants that the department or EPA regulates and uses any of the following terms must include definitions, as applicable, of the terms used:

(1) "Treatment technique" means a required process intended to reduce the level of a contaminant in drinking water.

(2) "Action level" means the concentration of a contaminant that, if exceeded, triggers treatment or other requirements that a water system shall follow.

(e) A report must include the information specified in this subsection for the following contaminants subject to mandatory monitoring, other than *Cryptosporidium*:

(1) Contaminants subject to an MCL, action level, or treatment technique, hereafter referred to as regulated contaminants.

(2) Disinfection byproducts or microbial contaminants for which monitoring is required by 40 CFR 141.142* and 40 CFR 141.143*, except as provided in subsection (e)(1), and that are detected in the finished water.

(3) The data relating to these contaminants must be displayed in one (1) table or in several adjacent tables. Any additional monitoring results that a community water system chooses to include in its report must be displayed separately.

(4) The data must be derived from data collected to comply with EPA and department monitoring and analytical requirements during calendar year 1998 for the first report and subsequent calendar years thereafter, except the following:

(A) Where a system is allowed to monitor for regulated contaminants less often than

once a year, the table or tables must include the date and results of the most recent sampling, and the report must include a brief statement indicating that the data presented in the report are from the most recent testing done in accordance with the regulations. No data older than five (5) years need be included.

(B) Results of monitoring in compliance with 40 CFR 141.142* and 40 CFR 141.143* need only be included for five (5) years from the date of the last sample or until any of the detected contaminants becomes regulated and subject to routine monitoring requirements, whichever comes first.

(5) For detected regulated contaminants listed in section 6(a) of this rule, the table or tables must contain the following information:

(A) The MCL for that contaminant expressed as a number equal to or greater than one and zero tenths (1.0), as listed in section 6(a) of this rule.

(B) The MCLG for that contaminant expressed in the same units as the MCL.

(C) If there is no MCL for a detected contaminant, the table must indicate that there is a treatment technique, or specify the action level, applicable to that contaminant, and the report shall include the definitions for treatment technique or action level, or both, as appropriate, specified in subsection (c)(4).

(D) For contaminants subject to an MCL, except turbidity and total coliforms, the highest contaminant level used to determine compliance with this rule and the range of detected levels as follows:

(i) When compliance with the MCL is determined annually or less frequently, the highest detected level at any sampling point and the range of detected levels expressed in the same units as the MCL.

(ii) When compliance with the MCL is determined by calculating a running annual average of all samples taken at a sampling point, the highest average of any of the sampling points and the range of all sampling points expressed in the same units as the MCL.

(iii) When compliance with the MCL is determined on a system-wide basis by calculating a running annual average of all samples at all sampling points, the average and range of detection expressed in the same units as the MCL.

(E) When turbidity is reported pursuant to 327 IAC 8-2-8.8 or **327 IAC 8-2.6-3**, the highest single measurement and the lowest monthly percentage of samples meeting the turbidity limits specified in 327 IAC 8-2-8.8 or **327 IAC 8-2.6-3** for the filtration technology being used. The report must include an explanation of the reasons for measuring turbidity.

(F) For lead and copper, the ninetieth percentile value of the most recent round of sampling and the number of sampling sites exceeding the action level.

(G) For total coliform, the highest monthly:

(i) number of positive samples for systems collecting fewer than forty (40) samples per month; or

(ii) percentage of positive samples for systems collecting at least forty (40) samples per month.

(H) For fecal coliform, the total number of positive samples.

- (I) The likely source or sources of detected contaminants to the best of the operator's knowledge. Specific information regarding contaminants may be available in sanitary surveys and source water assessments, and must be used when available to the operator. If the operator lacks specific information on the likely source, the report must include one (1) or more of the typical sources for that contaminant listed in section 6(b) of this rule that are most applicable to the system.
- (6) If a community water system distributes water to its customers from multiple hydraulically independent distribution systems that are fed by different raw water sources:
- (A) the table must contain a separate column for each service area and the report must identify each separate distribution system; or
 - (B) the system may produce separate reports tailored to include data for each service area.
- (7) The table must clearly identify any data indicating violations of MCLs or treatment techniques, and the report must contain a clear and readily understandable explanation of the violation, including the length of the violation, the potential adverse health effects, and actions taken by the system to address the violation. To describe the potential health effects, the system shall use the relevant language of section 6(c) of this rule.
- (f) Each report must contain the following information on *Cryptosporidium*, radon, and other contaminants:
- (1) If the system has performed any monitoring for *Cryptosporidium*, including monitoring performed to satisfy the requirements of 40 CFR 141.143*, that indicates *Cryptosporidium* may be present in the source water or the finished water, the report must include:
 - (A) a summary of the results of the monitoring; and
 - (B) an explanation of the significance of the results.
 - (2) If the system has performed any monitoring for radon that indicates radon may be present in the finished water, the report must include:
 - (A) the results of the monitoring; and
 - (B) an explanation of the significance of the results.
 - (3) If the system has performed additional monitoring that indicates the presence of other contaminants in the finished water, the commissioner strongly encourages systems to report any results that may indicate a health concern. To determine if results may indicate a health concern, the commissioner recommends that systems find out if EPA has proposed a National Primary Drinking Water Regulation (NPDWR) or issued a health advisory for that contaminant by calling the Safe Drinking Water Hotline at (800) 426-4791. The commissioner and EPA consider levels detected above a proposed federal or state MCL or health advisory level to indicate possible health concerns. For such contaminants, the commissioner recommends that the report includes:
 - (A) the results of the monitoring; and
 - (B) an explanation of the significance of the results noting the existence of a health advisory or a proposed regulation.
- (g) In addition to the requirements of subsection (d)(5), the report must note any violation of a

requirement listed in this subsection that occurred during the year covered by the report, and include a clear and readily understandable explanation of the violation, any potential adverse health effects, and the steps the system has taken to correct the violation. Violations of the following requirements must be included:

- (1) Monitoring and reporting of compliance data.
- (2) Filtration and disinfection prescribed by 327 IAC 8-2-8.5 and 327 IAC 8-2-8.6. For systems that have failed to install adequate filtration or disinfection equipment or processes, or have had a failure of such equipment or processes that constitutes a violation, the report must include the following language as part of the explanation of potential health effects, “inadequately treated water may contain disease-causing organisms. These organisms include bacteria, viruses, and parasites that can cause symptoms such as nausea, cramps, diarrhea, and associated headaches.”.
- (3) Lead and copper control requirements prescribed by 327 IAC 8-2-36 through 327 IAC 8-2-47. For systems that fail to take one (1) or more actions prescribed by 327 IAC 8-2-36(d) or 327 IAC 8-2-40 through 327 IAC 8-2-43, the report must include the applicable language from section 6(c) of this rule for lead or copper, or both.
- (4) Treatment techniques for acrylamide and epichlorohydrin prescribed by 327 IAC 8-2-35. For systems that violate 327 IAC 8-2-35, the report shall include the relevant language from section 6(c) of this rule.
- (5) Record keeping of compliance data.
- (6) Special monitoring requirements prescribed by 327 IAC 8-2-21.
- (7) Violation of the terms of an administrative or judicial order.

(h) The following additional information must be contained in the report:

(1) A brief explanation regarding contaminants that may reasonably be expected to be found in drinking water, including bottled water. This explanation may include the language in clauses (A) through (C), or systems may use their own comparable language. The report must also include the language of clause (D). The language is as follows:

(A) The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally-occurring minerals, and in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity.

(B) Contaminants that may be present in source water include the following:

- (i) Microbial contaminants, such as viruses and bacteria, that may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.
- (ii) Inorganic contaminants, such as salts and metals, that can be naturally-occurring or result from urban stormwater run-off, industrial or domestic wastewater discharges, oil and gas production, mining, or farming.
- (iii) Pesticides and herbicides, that may come from a variety of sources, such as agriculture, urban stormwater run-off, and residential uses.
- (iv) Organic chemical contaminants, including synthetic and volatile organic

chemicals, that are byproducts of industrial processes and petroleum production, and can also come from gas stations, urban stormwater run-off, and septic systems.

(v) Radioactive contaminants, that can be naturally-occurring or be the result of oil and gas production and mining activities.

(C) In order to ensure that tap water is safe to drink, the department and EPA prescribe regulations that limit the amount of certain contaminants in water provided by public water systems. Federal Drug Administration (FDA) regulations establish limits for contaminants in bottled water that must provide the same protection for public health.

(D) Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that the water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the Environmental Protection Agency's Safe Drinking Water Hotline at (800) 426-4791.

(2) The telephone number of the owner, operator, or designee of the community water system as a source of additional information concerning the report.

(3) In communities with a large proportion of non-English speaking residents, in which twenty percent (20%) or more of the residents speak the same language other than English, the report must contain information in the appropriate language or languages regarding the importance of the report or contain a telephone number or address where such residents may contact the system to obtain a translated copy of the report or assistance in the appropriate language.

(4) The report must include information about opportunities for public participation in decisions that may affect the quality of water. This information may include, but is not limited to, the time and place of regularly scheduled board meetings.

(5) The systems may include such additional information as they deem necessary for public education consistent with, and not detracting from, the purpose of the report.

*The Code of Federal Regulations (CFR) citations are incorporated by reference into this rule and are available from the Superintendent of Documents, Government Printing Office, Washington, D.C. 20402 or from the Indiana Department of Environmental Management, Office of Water Quality, Indiana Government Center-North, Twelfth Floor, Room 1255, 100 North Senate Avenue, Indianapolis, Indiana 46206. (*Water Pollution Control Board; 327 IAC 8-2.1-3; filed Mar 22, 2000, 3:23 p.m.: 23 IR 1899; filed Jul 23, 2001, 1:02 p.m.: 24 IR 3982; filed Nov 20, 2001, 10:20 a.m.: 25 IR 1098*)

SECTION 10. 327 IAC 8-2.1-4 IS AMENDED TO READ AS FOLLOWS:

327 IAC 8-2.1-4 Required additional health information

Authority: IC 13-13-5-1; IC 13-13-5-2; IC 13-18-16-6; IC 13-18-16-7; IC 13-18-16-9

Affected: IC 13-18-16

Sec. 4. (a) A report must prominently display the language: "Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised

persons, such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. U.S. Environmental Protection Agency and Centers for Disease Control guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants are available from the Safe Drinking Water Hotline at (800) 426-4791.”.

(b) If a system detects arsenic at levels above twenty-five (25) micrograms per liter, but below the MCL, it shall do one (1) of the following:

(1) Include in its report the language: “The U.S. Environmental Protection Agency is reviewing the drinking water standard for arsenic because of special concerns that it may not be stringent enough. Arsenic is a naturally-occurring mineral known to cause cancer in humans at high concentrations.”.

(2) Write its own educational statement, if such statement is written in consultation with the commissioner, and include that statement in the report.

(c) If a system detects nitrate at levels above five (5) milligrams per liter, but below the MCL, it shall do one (1) of the following:

(1) Include in its report the language: “Nitrate in drinking water at levels above ten (10) parts per million is a health risk for infants of less than six (6) months of age. High nitrate levels in drinking water can cause blue-baby syndrome. Nitrate levels may rise quickly for short periods of time because of rainfall or agricultural activity. If you are caring for an infant, seek advice from your health care provider.”.

(2) Write its own educational statement, if such statement is written in consultation with the commissioner, and include that statement in the report.

(d) If a system detects lead above the action level in more than five percent (5%), and up to and including ten percent (10%), of homes sampled, it shall do one (1) of the following:

(1) Include in its report the language: “Infants and young children are typically more vulnerable to lead in drinking water than the general population. It is possible that lead levels at your home may be higher than at other homes in the community as a result of materials used in your home’s plumbing. If you are concerned about elevated lead levels in your home’s water, you may wish to have your water tested and flush your tap for thirty (30) seconds to two (2) minutes before using tap water. Additional information is available from the Safe Drinking Water Hotline at (800) 426-4791.”.

(2) Write its own educational statement, if such statement is written in consultation with the commissioner, and include that statement in the report.

(e) If a system detects total trihalomethanes above eight-hundredths (0.08) milligrams per liter, but below the MCL in 327 IAC 8-2-5(a), as an annual average, monitored and calculated under the provisions of 327 IAC 8-2-5.3, it shall include in its report the health effects language in ~~section 6(e)(5)(S)~~ **table 17(G)(74) contained in section 17** of this rule. (*Water Pollution Control Board; 327 IAC 8-2.1-4; filed Mar 22, 2000, 3:23 p.m.: 23 IR 1902*)

SECTION 11. 327 IAC 8-2.1-6, AS AMENDED AT 25 IR 1100, SECTION 15, IS AMENDED TO READ AS FOLLOWS:

327 IAC 8-2.1-6 Other required information

Authority: IC 13-13-5-1; IC 13-13-5-2; IC 13-18-16-6; IC 13-18-16-7; IC 13-18-16-9

Affected: IC 13-18-16

Sec. 6. (a) In order to convert MCLs to numbers greater than or equal to one and zero-tenths (1.0) for the required table referenced in section 3 of this rule, a community water system shall use the following table:

Table 6-1: Converting MCL Compliance Values for Consumer Confidence Reports

Contaminant	MCL in Compliance Units (mg/l)	multiply by...	MCL in CCR Units	MCLG in CCR Units
Microbiological contaminants				
1. Total coliform bacteria			5% of monthly samples are positive (systems that collect forty (40) or more samples per month); one (1) positive monthly sample (systems that collect fewer than forty (40) samples per month).	0
2. Fecal coliform and E. coli			A routine sample and a repeat sample are total coliform positive, and one (1) is also fecal coliform or E. coli positive.	0
3. Total organic carbon	TT		TT	n/a
3.4. Turbidity			TT (NTU)	n/a
Radioactive contaminants				
4.5. Beta/photon emitters	4 mrem/year		4 mrem/year	0
5.6. Alpha emitters	15 pCi/l		15 pCi/l	0
6.7. Combined radium	5 pCi/l		5 pCi/l	0
Inorganic contaminants				
7.8. Antimony	0.006	1,000	6 ppb	6
8.9. Arsenic	0.05	1,000	50 ppb	n/a
9.10. Asbestos	7 MFL		7 MFL	7
10.11. Barium	2		2 ppm	2
11.12. Beryllium	0.004	1,000	4 ppb	4
12.13. Cadmium	0.005	1,000	5 ppb	5
13.14. Chromium	0.1	1,000	100 ppb	100
14.15. Copper	AL = 1.3		AL = 1.3 ppm	1.3
15.16. Cyanide	0.2	1,000	200 ppb	200

16. 17. Fluoride	4		4 ppm	4
17. 18. Lead	AL = 0.015	1,000	AL = 15 ppb	0
18. 19. Mercury (inorganic)	0.002	1,000	2 ppb	2
19. 20. Nitrate (as nitrogen)	10		10 ppm	10
20. 21. Nitrite (as nitrogen)	1		1 ppm	1
21. 22. Selenium	0.05	1,000	50 ppb	50
22. 23. Thallium	0.002	1,000	2 ppb	0.5
Synthetic organic contaminants including pesticides and herbicides				
23. 24. 2,4-D	0.07	1,000	70 ppb	70
24. 25. 2,4,5-TP (silvex)	0.05	1,000	50 ppb	50
25. 26. Acrylamide			TT	0
26. 27. Alachlor	0.002	1,000	2 ppb	0
27. 28. Atrazine	0.003	1,000	3 ppb	3
28. 29. Benzo(a)pyrene (PAH)	0.0002	1,000,000	200 ppt	0
29. 30. Carbofuran	0.04	1,000	40 ppb	40
30. 31. Chlordane	0.002	1,000	2 ppb	0
31. 32. Dalapon	0.2	1,000	200 ppb	200
32. 33. Di(2- ethylhexyl)adipate	.4	1,000	400 ppb	400
33. 34. Di(2- ethylhexyl)phthalate	0.006	1,000	6 ppb	0
34. 35. Dibromochloropropane	0.0002	1,000,000	200 ppt	0
35. 36. Dinoseb	0.007	1,000	7 ppb	7
36. 37. Diquat	0.02	1,000	20 ppb	20
37. 38. Dioxin (2,3,7,8- TCDD)	0.00000003	1,000,000,000	30 ppq	0
38. 39. Endothall	0.1	1,000	100 ppb	100
39. 40. Endrin	0.002	1,000	2 ppb	2
40. 41. Epichlorohydrin			TT	0
41. 42. Ethylene dibromide	0.00005	1,000,000	50 ppt	0
42. 43. Glyphosate	0.7	1,000	700 ppb	700
43. 44. Heptachlor	0.0004	1,000,000	400 ppt	0
44. 45. Heptachlor epoxide	0.0002	1,000,000	200 ppt	0
45. 46. Hexachlorobenzene	0.001	1,000	1 ppb	0
46. 47. Hexachlorocyclopentadiene	0.05	1,000	50 ppb	50
47. 48. Lindane	0.0002	1,000	200 ppt	200
48. 49. Methoxychlor	0.04	1,000	40 ppb	40
49. 50. Oxamyl (vydate)	0.2	1,000	200 ppb	200

50. 51. PCBs (polychlorinated biphenyls)	0.0005	1,000,000	500 ppt	0
51. 52. Pentachlorophenol	0.001	1,000	1 ppb	0
52. 53. Picloram	0.5	1,000	500 ppb	500
53. 54. Simazine	0.004	1,000	4 ppb	4
54. 55. Toxaphene	0.003	1,000	3 ppb	0
Volatile organic contaminants				
55. 56. Benzene	0.005	1,000	5 ppb	0
57. Bromate	.010	1,000	10 ppb	0
56. 58. Carbon tetrachloride	0.005	1,000	5 ppb	0
59. Chloramines	MRDL = 4		MRDL = 4 ppm	MRDLG = 4
60. Chlorine	MRDL = 4		MRDL = 4 ppm	MRDLG = 4
61. Chlorite	1		1 ppm	.8
62. Chloride dioxide	MRDL = .8	1,000	MRDL = 800ppb	MRDLG = 800
57. 63. Chlorobenzene	0.1	1,000	100 ppb	100
58. 64. o-Dichlorobenzene	0.6	1,000	600 ppb	600
59. 65. p-Dichlorobenzene	0.075	1,000	75 ppb	75
60. 66. 1,2-Dichloroethane	0.005	1,000	5 ppb	0
61. 67. 1,1-Dichloroethylene	0.007	1,000	7 ppb	7
62. 68. cis-1,2-Dichloroethylene	0.07	1,000	70 ppb	70
63. 69. trans-1,2-Dichloroethylene	0.1	1,000	100 ppb	100
64. 70. Dichloromethane	0.005	1,000	5 ppb	0
65. 71. 1,2-Dichloropropane	0.005	1,000	5 ppb	0
66. 72. Ethylbenzene	0.7	1,000	700 ppb	700
73. Haloacetic acids (HAA)	.060	1,000	60 ppb	n/a
67. 74. Styrene	0.1	1,000	100 ppb	100
68. 75. Tetrachloroethylene	0.005	1,000	5 ppb	0
69. 76. 1,2,4-Trichlorobenzene	0.07	1,000	70 ppb	70
70. 77. 1,1,1-Trichloroethane	0.2	1,000	200 ppb	200
71. 78. 1,1,2-Trichloroethane	0.005	1,000	5 ppb	3
72. 79. Trichloroethylene	0.005	1,000	5 ppb	0
73. 80. TTHMs (total trihalomethanes)	0.1	1,000	100 ppb	n/a
74. 81. Toluene	1		1 ppm	1
75. 82. Vinyl chloride	0.002	1,000	2 ppb	0
76. 83. Xylenes	10		10 ppm	10

Key:

AL = Action level.

MCL = Maximum contaminant level.

MCLG = Maximum contaminant level goal.

MFL = Million fibers per liter.

mrem/year = Millirems per year (a measure of radiation absorbed by the body).

NTU = Nephelometric turbidity units.

pCi/l = Picocuries per liter (a measure of radioactivity).

ppm = Parts per million, or milligrams per liter (mg/l).

ppb = Parts per billion, or micrograms per liter (µg/l).

ppt = Parts per trillion, or nanograms per liter (ng/l).

ppq = Parts per quadrillion, or picograms per liter (pg/l).

TT = Treatment technique.

(b) In order to show potential sources of contamination for the table required by section 3 of this rule, a community water system shall use the following table:

Table 6-2: Regulated Contaminants

Contaminant (units)	MCLG	MCL	Major Sources in Drinking Water
Microbiological contaminants			
1. Total coliform bacteria	0	5% of monthly samples are positive (systems that collect forty (40) or more samples per month); one (1) positive monthly sample (systems that collect fewer than forty (40) samples per month).	Naturally present in the environment.
2. Fecal coliform and E. coli	0	A routine sample and a repeat sample are total coliform positive, and one (1) is also fecal coliform or E. coli positive.	Human and animal fecal waste.
3. Total organic carbon	n/a	TT	Naturally present in the environment.
3.4. Turbidity	n/a	TT	Soil run-off.
Radioactive contaminants			
4.5. Beta/photon emitters (mrem/year)	0	4	Decay of natural and manmade deposits.
5.6. Alpha emitters (pCi/l)	0	15	Erosion of natural deposits.
6.7. Combined radium (pCi/l)	0	5	Erosion of natural deposits.
Inorganic contaminants			

7 . 8. Antimony (ppb)	6	6	Discharge from petroleum refineries; fire retardants; ceramics; electronics; solder.
8 . 9. Arsenic (ppb)	n/a	50	Erosion of natural deposits; run-off from orchards; run-off from glass and electronics production wastes.
9 . 10. Asbestos (MFL)	7	7	Decay of asbestos cement water mains; erosion of natural deposits.
10 . 11. Barium (ppm)	2	2	Discharge of drilling wastes; discharge from metal refineries; erosion of natural deposits.
11 . 12. Beryllium (ppb)	4	4	Discharge from metal refineries and coal-burning factories; discharge from electrical, aerospace, and defense industries.
12 . 13. Cadmium (ppb)	5	5	Corrosion of galvanized pipes; erosion of natural deposits; discharge from metal refineries; run-off from waste batteries and paints.
13 . 14. Chromium (ppb)	100	100	Discharge from steel and pulp mills; erosion of natural deposits.
14 . 15. Copper (ppm)	1.3	AL = 1.3	Corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives.
15 . 16. Cyanide (ppb)	200	200	Discharge from steel/metal factories; discharge from plastic and fertilizer factories.
16 . 17. Fluoride (ppm)	4	4	Erosion of natural deposits; water additive that promotes strong teeth; discharge from fertilizer and aluminum factories.
17 . 18. Lead (ppb)	0	AL = 15	Corrosion of household plumbing systems; erosion of natural deposits.

18. 19. Mercury (inorganic) (ppb)	2	2	Erosion of natural deposits; discharge from refineries and factories; run-off from landfills; run-off from cropland.
19. 20. Nitrate (as nitrogen) (ppm)	10	10	Run-off from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits.
20. 21. Nitrite (as nitrogen) (ppm)	1	1	Run-off from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits.
21. 22. Selenium (ppb)	50	50	Discharge from petroleum and metal refineries; erosion of natural deposits; discharge from mines.
22. 23. Thallium (ppb)	0.5	2	Leaching from ore-processing sites; discharge from electronics, glass, and drug factories.
Synthetic organic contaminants, including pesticides and herbicides			
23. 24. 2,4-D (ppb)	70	70	Run-off from herbicide used on row crops.
24. 25. 2,4,5-TP (Silvex) (ppb)	50	50	Residue of banned herbicide.
25. 26. Acrylamide	0	TT	Added to water during sewage/wastewater treatment.
26. 27. Alachlor (ppb)	0	2	Run-off from herbicide used on row crops.
27. 28. Atrazine (ppb)	3	3	Run-off from herbicide used on row crops.
28. 29. Benzo(a)pyrene (PAH) (ppt)	0	200	Leaching from linings of water storage tanks and distribution lines.
29. 30. Carbofuran (ppb)	40	40	Leaching of soil fumigant used on rice and alfalfa.
30. 31. Chlordane (ppb)	0	2	Residue of banned termiticide.
31. 32. Dalapon (ppb)	200	200	Run-off from herbicide used on rights-of-way.
32. 33. Di(2-ethylhexyl)adipate (ppb)	400	400	Discharge from chemical factories.
33. 34. Di(2-ethylhexyl)phthalate (ppb)	0	6	Discharge from rubber and chemical factories.

34. 35. Dibromochloropropane (ppt)	0	200	Run-off/leaching from soil fumigant used on soybeans, cotton, pineapples, and orchards.
35. 36. Dinoseb (ppb)	7	7	Run-off from herbicide used on soybeans and vegetables.
36. 37. Diquat (ppb)	20	20	Run-off from herbicide use.
37. 38. Dioxin (2,3,7,8-TCDD) (ppq)	0	30	Emissions from waste incineration and other combustion; discharge from chemical factories.
38. 39. Endothall (ppb)	100	100	Run-off from herbicide use.
39. 40. Endrin (ppb)	2	2	Residue of banned insecticide.
40. 41. Epichlorohydrin	0	TT	Discharge from industrial chemical factories; an impurity of same water treatment chemicals.
41. 42. Ethylene dibromide (ppt)	0	50	Discharge from petroleum refineries.
42. 43. Glyphosate (ppb)	700	700	Run-off from herbicide use.
43. 44. Heptachlor (ppt)	0	400	Residue of banned termiticide.
44. 45. Heptachlor epoxide (ppt)	0	200	Breakdown of heptachlor.
45. 46. Hexachlorobenzene (ppb)	0	1	Discharge from metal refineries and agricultural chemical factories.
46. 47. Hexachlorocyclopentadiene (ppb)	50	50	Discharge from chemical factories.
47. 48. Lindane (ppt)	200	200	Run-off/leaching from insecticide used on cattle, lumber, gardens.
48. 49. Methoxychlor (ppb)	40	40	Run-off/leaching from insecticide used on fruits, vegetables, alfalfa, livestock.
49. 50. Oxamyl (vydate) (ppb)	200	200	Run-off/leaching from insecticide used on apples, potatoes, and tomatoes.
50. 51. PCBs (polychlorinated biphenyls) (ppt)	0	500	Run-off from landfills; discharge of waste chemicals.
51. 52. Pentachlorophenol (ppb)	0	1	Discharge from wood preserving factories.
52. 53. Picloram (ppb)	500	500	Herbicide run-off.
53. 54. Simazine (ppb)	4	4	Herbicide run-off.

54. 55. Toxaphene (ppb)	0	3	Run-off/leaching from insecticide used on cotton and cattle.
Volatile organic contaminants			
55. 56. Benzene (ppb)	0	5	Discharge from factories; leaching from gas storage tanks and landfills.
57. Bromate (ppb)	0	10	Byproduct of drinking water chlorination.
56. 58. Carbon tetrachloride (ppb)	0	5	Discharge from chemical plants and other industrial activities.
59. Chloramines (ppm)	MRDLG = 4	MRDL = 4	Water additive used to control microbes.
60. Chlorine (ppm)	MRDLG = 4	MRDL = 4	Water additive used to control microbes.
61. Chlorite (ppm)	.8	1	Byproduct of drinking water chlorination.
62. Chloride dioxide (ppb)	MRDLG = 800	MRDL = 800	Water additive used to control microbes.
57. 63. Chlorobenzene (ppb)	100	100	Discharge from chemical and agricultural chemical factories.
58. 64. o-Dichlorobenzene (ppb)	600	600	Discharge from industrial chemical factories.
59. 65. p-Dichlorobenzene (ppb)	75	75	Discharge from industrial chemical factories.
60. 66. 1,2-Dichloroethane (ppb)	0	5	Discharge from industrial chemical factories.
61. 67. 1,1-Dichloroethylene (ppb)	7	7	Discharge from industrial chemical factories.
62. 68. cis-1,2-Dichloroethylene (ppb)	70	70	Discharge from industrial chemical factories.
63. 69. trans-1,2-Dichloroethylene (ppb)	100	100	Discharge from industrial chemical factories.
64. 70. Dichloromethane (ppb)	0	5	Discharge from pharmaceutical and chemical factories.
65. 71. 1,2-Dichloropropane (ppb)	0	5	Discharge from industrial chemical factories.
66. 72. Ethylbenzene (ppb)	700	700	Discharge from petroleum refineries.
73. Haloacetic Acids (HAA) (ppb)	n/a	60	Byproduct of drinking water disinfection.

67 74. Styrene (ppb)	100	100	Discharge from rubber and plastic factories; leaching from landfills.
68 75. Tetrachloroethylene (ppb)	0	5	Discharge from factories and dry cleaners.
69 76. 1,2,4-Trichlorobenzene (ppb)	70	70	Discharge from textile-finishing factories.
70 77. 1,1,1-Trichloroethane (ppb)	200	200	Discharge from metal degreasing sites and other factories.
71 78. 1,1,2-Trichloroethane (ppb)	3	5	Discharge from industrial chemical factories.
72 79. Trichloroethylene (ppb)	0	5	Discharge from metal degreasing sites and other factories.
73 80. TTHMs (total trihalomethanes) (ppb)	n/a	100	Byproduct of drinking water chlorination.
74 81. Toluene (ppm)	1	1	Discharge from petroleum factories.
75 82. Vinyl chloride (ppb)	0	2	Leaching from PVC piping; discharge from plastics factories.
76 83. Xylenes (ppm)	10	10	Discharge from petroleum factories; discharge from chemical factories.

Key:

AL = Action level.

MCL = Maximum contaminant level.

MCLG = Maximum contaminant level goal.

MFL = Million fibers per liter.

mrem/year = millirems per year (a measure of radiation absorbed by the body).

NTU = Nephelometric turbidity units.

pCi/l = Picocuries per liter (a measure of radioactivity).

ppm = Parts per million, or milligrams per liter (mg/l).

ppb = Parts per billion, or micrograms per liter (µg/l).

ppt = Parts per trillion, or nanograms per liter (ng/l).

ppq = Parts per quadrillion, or picograms per liter (pg/l).

TT = Treatment technique.

(c) The language in section 17 of this rule shall be used if there is a violation referenced in section 3 of this rule and health effects language is required unless alternate language is listed in this subsection as follows:

(1) Fecal coliform/E. coli. Fecal coliforms and E. coli are bacteria whose presence indicates that the water may be contaminated with animal or human wastes. Microbes in these wastes can cause short term effects, such as diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a special health risk for infants, young children, and people with severely compromised immune systems.

(2) Fluoride. Some people who drink water containing fluoride in excess of the MCL over many years could get bone disease, including pain and tenderness of the bones. Children may get mottled teeth.

(Water Pollution Control Board; 327 IAC 8-2.1-6; filed Mar 22, 2000, 3:23 p.m.: 23 IR 1903; filed Nov 20, 2001, 10:20 a.m.: 25 IR 1100)

SECTION 12. 327 IAC 8-2.1-8, AS ADDED AT 25 IR 1110, SECTION 17, IS AMENDED TO READ AS FOLLOWS:

327 IAC 8-2.1-8 Tier 1 public notice; form, manner, and frequency of notice

Authority: IC 13-13-5-1; IC 13-13-5-2; IC 13-18-16-6; IC 13-18-16-7; IC 13-18-16-9

Affected: IC 13-18-16

Sec. 8. (a) The following violations or situations require a Tier 1 public notice:

(1) Violation of the MCL for total coliforms when fecal coliform or E. coli are present in the water distribution system as specified in 327 IAC 8-2-7(b), or the water system fails to test for fecal coliforms or E. coli when any repeat sample tests positive for coliform as specified in 327 IAC 8-2-8.3.

(2) Violation of the MCL for nitrate, nitrite, or total nitrate and nitrite, as defined in 327 IAC 8-2-4, or when the water system fails to take a confirmation sample within twenty-four (24) hours of the system's receipt of the first sample showing an exceedance of the nitrate or nitrite MCL, as specified in 327 IAC 8-2-4.1(h)(2).

(3) Exceedance of the nitrate MCL by noncommunity water systems, where permitted to exceed the MCL by the commissioner under 327 IAC 8-2-4.

(4) Violation of the 327 IAC 8-2-8.5(c) treatment technique requirement resulting from a single exceedance of the maximum allowable turbidity limit as identified in section 16 of this rule, where the commissioner determines after consultation that a Tier 1 notice is required or where consultation does not take place within twenty-four (24) hours after the system learns of the violation.

(5) Occurrence of a waterborne disease outbreak, as defined in 327 IAC 8-2-1, or other waterborne emergency. This includes failure or significant interruption in key water treatment processes, a natural disaster that disrupts the water supply or distribution system, or a chemical spill or unexpected loading of possible pathogens into the source water that significantly increases the potential for drinking water contamination.

(6) Other violations or situations with significant potential to have serious adverse effects on human health as a result of short term exposure, as determined by the commissioner either in its regulations or on a case-by-case basis.

(7) Violation of the MRDL for chlorine dioxide as defined in 327 IAC 8-2.5-3(a) and

determined according to 327 IAC 8-2.5-5.

(b) Tier 1 public notice needs to be provided as follows:

(1) Provide a public notice as soon as practical but no later than twenty-four (24) hours after the system learns of the violation.

(2) Initiate consultation with the commissioner as soon as practical, but no later than twenty-four (24) hours after the public water system learns of the violation or situation, to determine additional public notice requirements.

(3) Comply with any additional public notification requirements that are established as a result of the consultation with the commissioner, including any repeat notices or direction on the duration of the posted notices. To reach all persons served, such requirements may include:

(A) timing;

(B) form;

(C) manner;

(D) frequency; and

(E) content of repeat notices and other actions designed.

(4) Public water systems must provide the notice within twenty-four (24) hours in a form and manner reasonably calculated to reach all persons served. The form and manner used by the public water system are to fit the specific situation, but must be designed to reach residential, transient, and nontransient users of the water system. In order to reach all persons served, water systems are to use, at a minimum, one (1) or more of the following forms of delivery:

(A) Appropriate broadcast media, such as:

(i) radio; or

(ii) television.

(B) Posting of the notice in conspicuous locations throughout the area served by the water system.

(C) Hand delivery of the notice to persons served by the water system.

(D) Another delivery method approved in writing by the commissioner.

(5) A community public water system shall give a copy of the most recent public notice to all new billing units or new hookups prior to or at the time service begins for any of the following outstanding violations:

(A) Any maximum contaminant level.

(B) Any maximum residual disinfectant level.

(C) Any treatment technique requirement.

(c) For violations of the MRDLs of disinfectants that may pose an acute risk to human health, a copy of the notice must be furnished to the radio and television stations serving the area served by the public water system as soon as possible but in no case later than seventy-two (72) hours after the violation. (*Water Pollution Control Board; 327 IAC 8-2.1-8; filed Nov 20, 2001, 10:20 a.m.: 25 IR 1110*)

SECTION 13. 327 IAC 8-2.1-16, AS ADDED AT 25 IR 1115, SECTION 25, IS AMENDED TO READ AS FOLLOWS:

327 IAC 8-2.1-16 Drinking water violations; other situations requiring public notice

Authority: IC 13-13-5-1; IC 13-13-5-2; IC 13-18-16-6; IC 13-18-16-7; IC 13-18-16-9

Affected: IC 13-18-16

Sec. 16. (a) Drinking water violations and other situations that require public notice according to this rule are contained in the following table:

Table 16. Drinking Water Violations and Other Situations Requiring Public Notice				
Contaminant	MCL/MRDL/TT/AL Violations		Monitoring and Testing Procedure Violations	
	Tier of Public Notice Required	Citation	Tier of Public Notice Required	Citation
I. Violations of Drinking Water Regulations:				
A. Microbiological Contaminants				
1. Total coliform	2	327 IAC 8-2-7(a)	3	327 IAC 8-2-8 327 IAC 8-2-8.1 327 IAC 8-2-8(f) 327 IAC 8-2-8.2 327 IAC 8-2-8.3
2. Fecal coliform/E. coli	1	327 IAC 8-2-7(b)	1, 3	327 IAC 8-2-8.3
3. Turbidity TT (resulting from a single exceedance of maximum allowable turbidity levels)	2,1	327 IAC 8-2-8.5(a) 327 IAC 8-2.6-3(1)(B) 327 IAC 8-2.6-3(2)	3	327 IAC 8-2-8.8(b) 327 IAC 8-2.6-4
4. Surface Water Treatment Rule violations, other than violations resulting from single exceedance of maximum allowable turbidity level (TT)	2	327 IAC 8-2-8.5 327 IAC 8-2-8.6	3	327 IAC 8-2-8.8
5. Interim Enhanced Surface Water Treatment Rule violations, other than violations resulting from single exceedance of maximum allowable turbidity level (TT)	2	327 IAC 8-2.6-1 327 IAC 8-2.6-2 327 IAC 8-2.6-3	3	327 IAC 8-2.6-2 327 IAC 8-2.6-4
6. Filter Backwash Recycling Rule	2	327 IAC 8-2.6-6	3	327 IAC 8-2.6-6

B. Inorganic Chemicals (IOCs)				
1. Antimony	2	327 IAC 8-2-4(d)	3	327 IAC 8-2-4.1(c) 327 IAC 8-2-4.1(e)
2. Arsenic	2	327 IAC 8-2-4(d) 327 IAC 8-2-4.1(l)(5)	3	327 IAC 8-2-4.1(c) 327 IAC 8-2-4.1(l)(3) 327 IAC 8-2-4.1(l)(4)
3. Asbestos (fibers >10 µm)	2	327 IAC 8-2-4(d)	3	327 IAC 8-2-4.1(c) 327 IAC 8-2-4.1(d)
4. Barium	2	327 IAC 8-2-4(d)	3	327 IAC 8-2-4.1(c) 327 IAC 8-2-4.1(e)
5. Beryllium	2	327 IAC 8-2-4(d)	3	327 IAC 8-2-4.1(c) 327 IAC 8-2-4.1(e)
6. Cadmium	2	327 IAC 8-2-4(d)	3	327 IAC 8-2-4.1(c) 327 IAC 8-2-4.1(e)
7. Chromium (total)	2	327 IAC 8-2-4(d)	3	327 IAC 8-2-4.1(c) 327 IAC 8-2-4.1(e)
8. Cyanide	2	327 IAC 8-2-4(d)	3	327 IAC 8-2-4.1(c) 327 IAC 8-2-4.1(e)
9. Fluoride	2	327 IAC 8-2-4(c)	3	327 IAC 8-2-4.1(c) 327 IAC 8-2-4.1(e)
10. Mercury (inorganic)	2	327 IAC 8-2-4(d)	3	327 IAC 8-2-4.1(c) 327 IAC 8-2-4.1(e)

11. Nitrate	1	327 IAC 8-2-4(b)	1, 3	327 IAC 8-2-4.1(c) 327 IAC 8-2-4.1(f) 327 IAC 8-2-4.1(h)(2)
12. Nitrite	1	327 IAC 8-2-4(b)	1, 3	327 IAC 8-2-4.1(c) 327 IAC 8-2-4.1(g) 327 IAC 8-2-4.1(h)(2)
13. Total Nitrate and Nitrite	1	327 IAC 8-2-4(b)	3	327 IAC 8-2-4.1(c)
14. Selenium	2	327 IAC 8-2-4(d)	3	327 IAC 8-2-4.1(c) 327 IAC 8-2-4.1(e)
15. Thallium	2	327 IAC 8-2-4(d)	3	327 IAC 8-2-4.1(c) 327 IAC 8-2-4.1(e)
C. Lead and Copper Rule				
1. Lead and Copper Rule (TT)	2	327 IAC 8-2-36 327 IAC 8-2-40 327 IAC 8-2-41 327 IAC 8-2-42 327 IAC 8-2-43 327 IAC 8-2-44	3	327 IAC 8-2-37 327 IAC 8-2-38 327 IAC 8-2-39 327 IAC 8-2-45
D. Synthetic Organic Chemicals (SOCs)				
1. 2,4-D	2	327 IAC 8-2-5(a)	3	327 IAC 8-2-5.1
2. 2,4,5-TP (Silvex)	2	327 IAC 8-2-5(a)	3	327 IAC 8-2-5.1
3. Alachlor	2	327 IAC 8-2-5(a)	3	327 IAC 8-2-5.1
4. Atrazine	2	327 IAC 8-2-5(a)	3	327 IAC 8-2-5.1
5. Benzo(a)pyrene (PAHs)	2	327 IAC 8-2-5(a)	3	327 IAC 8-2-5.1
6. Carbofuran	2	327 IAC 8-2-5(a)	3	327 IAC 8-2-5.1
7. Chlordane	2	327 IAC 8-2-5(a)	3	327 IAC 8-2-5.1

8. Dalapon	2	327 IAC 8-2-5(a)	3	327 IAC 8-2-5.1
9. Di (2-ethylhexyl) adipate	2	327 IAC 8-2-5(a)	3	327 IAC 8-2-5.1
10. Di (2-ethylhexyl) phthalate	2	327 IAC 8-2-5(a)	3	327 IAC 8-2-5.1
11. Dibromochloropropane	2	327 IAC 8-2-5(a)	3	327 IAC 8-2-5.1
12. Dinoseb	2	327 IAC 8-2-5(a)	3	327 IAC 8-2-5.1
13. Dioxin (2,3,7,8-TCDD)	2	327 IAC 8-2-5(a)	3	327 IAC 8-2-5.1
14. Diquat	2	327 IAC 8-2-5(a)	3	327 IAC 8-2-5.1
15. Endothall	2	327 IAC 8-2-5(a)	3	327 IAC 8-2-5.1
16. Endrin	2	327 IAC 8-2-5(a)	3	327 IAC 8-2-5.1
17. Ethylene dibromide	2	327 IAC 8-2-5(a)	3	327 IAC 8-2-5.1
18. Glyphosate	2	327 IAC 8-2-5(a)	3	327 IAC 8-2-5.1
19. Heptachlor	2	327 IAC 8-2-5(a)	3	327 IAC 8-2-5.1
20. Heptachlor epoxide	2	327 IAC 8-2-5(a)	3	327 IAC 8-2-5.1
21. Hexachlorobenzene	2	327 IAC 8-2-5(a)	3	327 IAC 8-2-5.1
22. Hexachlorocyclopentadiene	2	327 IAC 8-2-5(a)	3	327 IAC 8-2-5.1
23. Lindane	2	327 IAC 8-2-5(a)	3	327 IAC 8-2-5.1
24. Methoxychlor	2	327 IAC 8-2-5(a)	3	327 IAC 8-2-5.1
25. Oxamyl (Vydate)	2	327 IAC 8-2-5(a)	3	327 IAC 8-2-5.1
26. Pentachlorophenol	2	327 IAC 8-2-5(a)	3	327 IAC 8-2-5.1
27. Picloram	2	327 IAC 8-2-5(a)	3	327 IAC 8-2-5.1
28. Polychlorinated biphenyls (PCBs)	2	327 IAC 8-2-5(a)	3	327 IAC 8-2-5.1

29. Simazine	2	327 IAC 8-2-5(a)	3	327 IAC 8-2-5.1
30. Toxaphene	2	327 IAC 8-2-5(a)	3	327 IAC 8-2-5.1
E. Volatile Organic Chemicals (VOCs)				
1. Benzene	2	327 IAC 8-2-5.4(a)	3	327 IAC 8-2-5.5
2. Carbon tetrachloride	2	327 IAC 8-2-5.4(a)	3	327 IAC 8-2-5.5
3. Chlorobenzene (monochlorobenzene)	2	327 IAC 8-2-5.4(a)	3	327 IAC 8-2-5.5
4. o-Dichlorobenzene	2	327 IAC 8-2-5.4(a)	3	327 IAC 8-2-5.5
5. p-Dichlorobenzene	2	327 IAC 8-2-5.4(a)	3	327 IAC 8-2-5.5
6. 1,2-Dichloroethane	2	327 IAC 8-2-5.4(a)	3	327 IAC 8-2-5.5
7. 1,1-Dichloroethylene	2	327 IAC 8-2-5.4(a)	3	327 IAC 8-2-5.5
8. cis-1,2-Dichloroethylene	2	327 IAC 8-2-5.4(a)	3	327 IAC 8-2-5.5
9. trans-1,2-Dichloroethylene	2	327 IAC 8-2-5.4(a)	3	327 IAC 8-2-5.5
10. Dichloromethane	2	327 IAC 8-2-5.4(a)	3	327 IAC 8-2-5.5
11. 1,2-Dichloropropane	2	327 IAC 8-2-5.4(a)	3	327 IAC 8-2-5.5
12. Ethylbenzene	2	327 IAC 8-2-5.4(a)	3	327 IAC 8-2-5.5
13. Styrene	2	327 IAC 8-2-5.4(a)	3	327 IAC 8-2-5.5
14. Tetrachloroethylene	2	327 IAC 8-2-5.4(a)	3	327 IAC 8-2-5.5
15. Toluene	2	327 IAC 8-2-5.4(a)	3	327 IAC 8-2-5.5
16. 1,2,4-Trichlorobenzene	2	327 IAC 8-2-5.4(a)	3	327 IAC 8-2-5.5
17. 1,1,1-Trichloroethane	2	327 IAC 8-2-5.4(a)	3	327 IAC 8-2-5.5
18. 1,1,2-Trichloroethane	2	327 IAC 8-2-5.4(a)	3	327 IAC 8-2-5.5

19. Trichloroethylene	2	327 IAC 8-2-5.4(a)	3	327 IAC 8-2-5.5
20. Vinyl chloride	2	327 IAC 8-2-5.4(a)	3	327 IAC 8-2-5.5
21. Xylenes (total)	2	327 IAC 8-2-5.4(a)	3	327 IAC 8-2-5.5
F. Radioactive Contaminants				
1. Beta/photon emitters	2	327 IAC 8-2-10	3	327 IAC 8-2-10.2 327 IAC 8-2-10.2(b)
2. Alpha emitters	2	327 IAC 8-2-9(2)	3	327 IAC 8-2-10.2 327 IAC 8-2-10.2(a)
3. Combined radium (226 and 228)	2	327 IAC 8-2-9(1)	3	327 IAC 8-2-10.2 327 IAC 8-2-10.2(a)
G. Disinfection Byproducts (DBPs). Where disinfection is used in the treatment of drinking water, disinfectants combine with organic and inorganic matter present in water to form chemicals called disinfection byproducts (DBPs). EPA sets standards for controlling the levels of DBPs in drinking water.				
1. Total trihalomethanes (TTHMs)	2	327 IAC 8-2-5(a) and 327 IAC 8-2-5(c)	3	327 IAC 8-2-5.3
2. Haloacetic acids (HAA5)	2	327 IAC 8-2.5-2(a)	3	327 IAC 8-2.5-6(a) and 327 IAC 8-2.5-6(b)
3. Bromate	2	327 IAC 8-2.5-2(a)	3	327 IAC 8-2.5-6(a) and 327 IAC 8-2.5-6(b)
4. Chlorite	2	327 IAC 8-2.5-2(a)	3	327 IAC 8-2.5-6(a) and 327 IAC 8-2.5-6(b)
5. Chlorine (MRDL)	2	327 IAC 8-2.5-3(a)	3	327 IAC 8-2.5-6(a) and 327 IAC 8-2.5-6(c)
6. Chloramine (MRDL)	2	327 IAC 8-2.5-3(a)	3	327 IAC 8-2.5-6(a) and 327 IAC 8-2.5-6(c)

7. Chlorine dioxide (MRDL), where any 2 consecutive daily samples at entrance to distribution system only are above MRDL	2	327 IAC 8-2.5-3(a)	2, 3	327 IAC 8-2.5-6(a), and 327 IAC 8-2.5-6(c), and 327 IAC 8-2.5-7(c)(2)
8. Chlorine dioxide (MRDL), where samples in distribution system the next day are also above MRDL	1	327 IAC 8-2.5-3(a)	1	327 IAC 8-2.5-6(a) and 327 IAC 8-2.5-6(c), 327 IAC 8-2.5-7(c)(2)
9. Control of DBP precursors - TOC (TT)	2	327 IAC 8-2.5-9(a) and 327 IAC 8-2.5-9(b)	3	327 IAC 8-2.5-6(a) and 327 IAC 8-2.5-6(d)
10. Bench marking and disinfection profiling	N/A	N/A	3	327 IAC 8-2.6-2
11. Development of monitoring plan	N/A	N/A	3	327 IAC 8-2.5-6(f)
H. Other Treatment Techniques				
1. Acrylamide (TT)	2	327 IAC 8-2-35	N/A	N/A
2. Epichlorohydrin (TT)	2	327 IAC 8-2-35	N/A	N/A
II. Unregulated Contaminant Monitoring:				
A. Nickel	N/A	N/A	3	327 IAC 8-2-4.1(e)
III. Other Situations Requiring Public Notification:				
A. Fluoride secondary maximum contaminant level (SMCL) exceedance	3	40 CFR § 143.3*	N/A	N/A
B. Exceedance of nitrate MCL for noncommunity systems, as allowed by the commissioner	1	327 IAC 8-2-4(b)	N/A	N/A
C. Waterborne disease outbreak	1	327 IAC 8-2-1	N/A	N/A
D. Other waterborne emergency	1	N/A	N/A	N/A
E. Other situations as determined by the commissioner	1, 2, 3	N/A	N/A	N/A
Key:				
MCL = Maximum contaminant level				
TT = Treatment technique				

(b) Drinking water violations and other situations that require public notice according to this rule are contained in the following provisions:

- (1) Violations and other situations not listed in ~~this table~~ **table 16 in subsection (a)**, such as reporting violations and failure to prepare Consumer Confidence Report do not require notice, unless otherwise determined by the commissioner. The commissioner may, ~~optionally~~, **at their option**, also require a more stringent public notice tier such as Tier 1 instead of Tier 2 or Tier 2 instead of Tier 3 for specific violations and situations listed ~~in the above~~: **table 16 in subsection (a)**.
- (2) Failure to test for fecal coliform or E. coli is a Tier 1 violation if testing is not done after any repeat sample tests positive for coliform. All other total coliform monitoring and testing procedure violations are Tier 3.
- (3) Systems with treatment technique violations involving a single exceedance of maximum turbidity limit under the surface water treatment rule (SWTR) are required to initiate consultation with the commissioner within twenty-four (24) hours after learning of the violation. Based on this consultation, the commissioner may subsequently decide to elevate the violation to Tier 1. If a system is unable to make contact with the commissioner in the twenty-four (24) hour period, the violation is automatically elevated to Tier 1.
- (4) Failure to take a confirmation sample within twenty-four (24) hours for nitrate or nitrite after an initial sample exceeds the MCL is a Tier 1 Violation. Other monitoring violations for nitrate are Tier 3.
- (5) Other waterborne emergencies require a Tier 1 public notice under section 8(a) of this rule for situations that do not meet the definition of a waterborne disease outbreak given in 327 IAC 8-2-1, but that still have the potential to have serious adverse effects on health as a result of short-term exposure. These could include outbreaks not related to treatment deficiencies, as well as situations that have the potential to cause outbreaks, such as failures or significant interruption in water treatment processes, natural disasters that disrupt the water supply or distribution system, chemical spills, or unexpected loading of possible pathogens into the source water.
- (6) The commissioner may place other situations in any tier believed appropriate, based on threat to public health.

*40 CFR 143.3 is incorporated by reference and is available for copying at the Indiana Department of Environmental Management, Office of Water Quality, 100 North Senate Avenue, Room 1255, Indianapolis, Indiana 46206. (*Water Pollution Control Board; 327 IAC 8-2.1-16; filed Nov 20, 2001, 10:20 a.m.: 25 IR 1115; errata filed Feb 22, 2002, 2:01 p.m.: 25 IR 2254*)

SECTION 14. 327 IAC 8-2.1-17, AS ADDED AT 25 IR 1118, SECTION 26, IS AMENDED TO READ AS FOLLOWS:

327 IAC 8-2.1-17 Drinking water violations; standard health effects language for public notice

Authority: IC 13-13-5-1; IC 13-13-5-2; IC 13-18-16-6; IC 13-18-16-7; IC 13-18-16-9

Affected: IC 13-18-16

Sec. 17. A public water system must comply with the standard health effects language for public notification contained in the following table:

Table 17. Standard Health Effects Language for Public Notification			
Contaminant	MCL G mg/L	MCL mg/L	Standard Health Effects Language for Public Notification
Drinking Water Regulations:			
A. Microbiological Contaminants, Surface Water Treatment Rule, and Interim Enhanced Surface Water Treatment Rule			
1a. Total coliform	Zero 0	See foot-note	Coliforms are bacteria that are naturally present in the environment and are used as an indicator that other, potentially-harmful, bacteria may be present. Coliforms were found in more samples than allowed and this was a warning of potential problems.
1b. Fecal coliform/E. coli	Zero 0	Zero 0	Fecal coliforms and E. coli are bacteria whose presence indicates that the water may be contaminated with human or animal wastes. Microbes in these wastes can cause short-term effects, such as diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a special health risk for infants, young children, some of the elderly, and people with severely compromised immune systems.
2a. Turbidity (MCL)	None	1 NTU/ 5 NTU	Turbidity has no health effects. However, turbidity can interfere with disinfection and provide a medium for microbial growth. Turbidity may indicate the presence of disease-causing organisms. These organisms include bacteria, viruses, and parasites that can cause symptoms such as nausea, cramps, diarrhea, and associated headaches.
2b. Turbidity (SWTR TT) and (IESWTR TT)	None	TT	Turbidity has no health effects. However, turbidity can interfere with disinfection and provide a medium for microbial growth. Turbidity may indicate the presence of disease-causing organisms. These organisms include bacteria, viruses, and parasites that can cause symptoms such as nausea, cramps, diarrhea, and associated headaches.

2c. <i>Giardia lamblia</i> 2d. Viruses 2e. Heterotrophic plate county (HPC) bacteria 2f. <i>Legionella</i> 2g. <i>Cryptosporidium</i>	0	TT	Inadequately treated water may contain disease-causing organisms. These organisms include bacteria, viruses, and parasites that can cause symptoms, such as nausea, cramps, diarrhea, and associated headaches.
B. Inorganic Chemicals (IOCs)			
3. Antimony	0.006	0.006	Some people who drink water containing antimony well in excess of the MCL over many years could experience increases in blood cholesterol and decreases in blood sugar.
4. Arsenic	None	0.05	Some people who drink water containing arsenic in excess of the MCL over many years could experience skin damage or problems with their circulatory system, and may have an increased risk of getting cancer.
5. Asbestos (>10 µm)	7 MFL	7 MFL	Some people who drink water containing asbestos in excess of the MCL over many years may have an increased risk of developing benign intestinal polyps.
6. Barium	2	2	Some people who drink water containing barium in excess of the MCL over many years could experience an increase in their blood pressure.
7. Beryllium	0.004	0.004	Some people who drink water containing beryllium well in excess of the MCL over many years could develop intestinal lesions.
8. Cadmium	0.005	0.005	Some people who drink water containing cadmium in excess of the MCL over many years could experience kidney damage.
9. Chromium (total)	0.1	0.1	Some people who use water containing chromium well in excess of the MCL over many years could experience allergic dermatitis.
10. Cyanide	0.2	0.2	Some people who drink water containing cyanide well in excess of the MCL over many years could experience nerve damage or problems with their thyroid.

11. Fluoride	4.0	4.0	Some people who drink water containing fluoride in excess of the MCL over many years could get bone disease, including pain and tenderness of the bones. Fluoride in drinking water at half the MCL or more may cause mottling of children's teeth, usually in children less than nine (9) years old. Mottling, also known as dental fluorosis, may include brown staining or pitting of the teeth, or both, and occurs only in developing teeth before they erupt from the gums.
12. Mercury (inorganic)	0.002	0.002	Some people who drink water containing inorganic mercury well in excess of the MCL over many years could experience kidney damage.
13. Nitrate	10	10	Infants below the age of six (6) months who drink water containing nitrate in excess of the MCL could become seriously ill and, if untreated, may die. Symptoms include shortness of breath and blue baby syndrome.
14. Nitrite	1	1	Infants below the age of six (6) months who drink water containing nitrite in excess of the MCL could become seriously ill and, if untreated, may die. Symptoms include shortness of breath and blue baby syndrome.
15. Total Nitrate and Nitrite	10	10	Infants below the age of six (6) months who drink water containing nitrate and nitrite in excess of the MCL could become seriously ill and, if untreated, may die. Symptoms include shortness of breath and blue baby syndrome.
16. Selenium	0.05	0.05	Selenium is an essential nutrient. However, some people who drink water containing selenium in excess of the MCL over many years could experience hair or fingernail losses, numbness in fingers or toes, or problems with their circulation.
17. Thallium	0.0005	0.002	Some people who drink water containing thallium in excess of the MCL over many years could experience hair loss, changes in their blood, or problems with their kidneys, intestines, or liver.
C. Lead and Copper Rule			
18. Lead	Zero 0	TT	Infants and children who drink water containing lead in excess of the action level could experience delays in their physical or mental development. Children could show slight deficits in attention span and learning abilities. Adults who drink this water over many years could develop kidney problems or high blood pressure.

19. Copper	1.3	TT	Copper is an essential nutrient, but some people who drink water containing copper in excess of the action level over a relatively short amount of time could experience gastrointestinal distress. Some people who drink water containing copper in excess of the action level over many years could suffer liver or kidney damage. People with Wilson's Disease should consult their personal doctor.
D. Synthetic Organic Chemicals (SOCs)			
20. 2,4-D	0.07	0.07	Some people who drink water containing the weed killer 2,4-D well in excess of the MCL over many years could experience problems with their kidneys, liver, or adrenal glands.
21. 2,4,5-TP (Silvex)	0.05	0.05	Some people who drink water containing silvex in excess of the MCL over many years could experience liver problems.
22. Alachlor	Zero 0	0.002	Some people who drink water containing alachlor in excess of the MCL over many years could have problems with their eyes, liver, kidneys, or spleen, or experience anemia, and may have an increased risk of getting cancer.
23. Atrazine	0.003	0.003	Some people who drink water containing atrazine well in excess of the MCL over many years could experience problems with their cardiovascular system or reproductive difficulties.
24. Benzo(a)pyrene (PAHs)	Zero 0	0.0002	Some people who drink water containing benzo(a)pyrene in excess of the MCL over many years may experience reproductive difficulties and may have an increased risk of getting cancer.
25. Carbofuran	0.04	0.04	Some people who drink water containing carbofuran in excess of the MCL over many years could experience problems with their blood, or nervous or reproductive systems.
26. Chlordane	Zero 0	0.002	Some people who drink water containing chlordane in excess of the MCL over many years could experience problems with their liver or nervous system, and may have an increased risk of getting cancer.
27. Dalapon	0.2	0.2	Some people who drink water containing dalapon well in excess of the MCL over many years could experience minor kidney changes.
28. Di (2-ethylhexyl) adipate	0.4	0.4	Some people who drink water containing di (2-ethylhexyl) adipate well in excess of the MCL over many years could experience general toxic effects or reproductive difficulties.

29. Di (2-ethylhexyl) phthalate	Zero 0	0.006	Some people who drink water containing di (2-ethylhexyl) phthalate in excess of the MCL over many years may have problems with their liver, or experience reproductive difficulties, and may have an increased risk of getting cancer.
30. Dibromochloropropane (DBCP)	Zero 0	0.0002	Some people who drink water containing DBCP in excess of the MCL over many years could experience reproductive difficulties and may have an increased risk of getting cancer.
31. Dinoseb	0.007	0.007	Some people who drink water containing dinoseb well in excess of the MCL over many years could experience reproductive difficulties.
32. Dioxin (2,3,7,8-TCDD)	Zero 0	3×10^{-8}	Some people who drink water containing dioxin in excess of the MCL over many years could experience reproductive difficulties and may have an increased risk of getting cancer.
33. Diquat	0.02	0.02	Some people who drink water containing diquat in excess of the MCL over many years could get cataracts.
34. Endothall	0.1	0.1	Some people who drink water containing endothall in excess of the MCL over many years could experience problems with their stomach or intestines.
35. Endrin	0.002	0.002	Some people who drink water containing endrin in excess of the MCL over many years could experience liver problems.
36. Ethylene dibromide	Zero 0	0.00005	Some people who drink water containing ethylene dibromide in excess of the MCL over many years could experience problems with their liver, stomach, reproductive system, or kidneys, and may have an increased risk of getting cancer.
37. Glyphosate	0.7	0.7	Some people who drink water containing glyphosate in excess of the MCL over many years could experience problems with their kidneys or reproductive difficulties.
38. Heptachlor	Zero 0	0.0004	Some people who drink water containing heptachlor in excess of the MCL over many years could experience liver damage and may have an increased risk of getting cancer.
39. Heptachlor epoxide	Zero 0	0.0002	Some people who drink water containing heptachlor epoxide in excess of the MCL over many years could experience liver damage, and may have an increased risk of getting cancer.

40. Hexachlorobenzene	Zero 0	0.001	Some people who drink water containing hexachlorobenzene in excess of the MCL over many years could experience problems with their liver or kidneys, or adverse reproductive effects, and may have an increased risk of getting cancer.
41. Hexachlorocyclopentadiene	0.05	0.05	Some people who drink water containing hexachlorocyclopentadiene well in excess of the MCL over many years could experience problems with their kidneys or stomach.
42. Lindane	0.0002	0.0002	Some people who drink water containing lindane in excess of the MCL over many years could experience problems with their kidneys or liver.
43. Methoxychlor	0.04	0.04	Some people who drink water containing methoxychlor in excess of the MCL over many years could experience reproductive difficulties.
44. Oxamyl (Vydate)	0.2	0.2	Some people who drink water containing oxamyl in excess of the MCL over many years could experience slight nervous system effects.
45. Pentachlorophenol	Zero 0	0.001	Some people who drink water containing pentachlorophenol in excess of the MCL over many years could experience problems with their liver or kidneys, and may have an increased risk of getting cancer.
46. Picloram	0.5	0.5	Some people who drink water containing picloram in excess of the MCL over many years could experience problems with their liver.
47. Polychlorinated biphenyls (PCBs)	Zero 0	0.0005	Some people who drink water containing PCBs in excess of the MCL over many years could experience changes in their skin, problems with their thymus gland, immune deficiencies, or reproductive or nervous system difficulties, and may have an increased risk of getting cancer.
48. Simazine	0.004	0.004	Some people who drink water containing simazine in excess of the MCL over many years could experience problems with their blood.
49. Toxaphene	Zero 0	0.003	Some people who drink water containing toxaphene in excess of the MCL over many years could have problems with their kidneys, liver, or thyroid, and may have an increased risk of getting cancer.
E. Volatile Organic Chemicals (VOCs)			
50. Benzene	Zero 0	0.005	Some people who drink water containing benzene in excess of the MCL over many years could experience anemia or a decrease in blood platelets, and may have an increased risk of getting cancer.

51. Carbon tetrachloride	Zero 0	0.005	Some people who drink water containing carbon tetrachloride in excess of the MCL over many years could experience problems with their liver and may have an increased risk of getting cancer.
52. Chlorobenzene (monochlorobenzene)	0.1	0.1	Some people who drink water containing chlorobenzene in excess of the MCL over many years could experience problems with their liver or kidneys.
53. o-Dichlorobenzene	0.6	0.6	Some people who drink water containing o-dichlorobenzene well in excess of the MCL over many years could experience problems with their liver, kidneys, or circulatory systems.
54. p-Dichlorobenzene	0.075	0.075	Some people who drink water containing p-dichlorobenzene in excess of the MCL over many years could experience anemia, damage to their liver, kidneys, or spleen, or changes in their blood.
55. 1,2-Dichloroethane	Zero 0	0.005	Some people who drink water containing 1,2-dichloroethane in excess of the MCL over many years may have an increased risk of getting cancer.
56. 1,1-Dichloroethylene	0.007	0.007	Some people who drink water containing 1,1-dichloroethylene in excess of the MCL over many years could experience problems with their liver.
57. cis-1,2-Dichloroethylene	0.07	0.07	Some people who drink water containing cis-1,2-dichloroethylene in excess of the MCL over many years could experience problems with their liver.
58. trans-1,2-Dichloroethylene	0.1	0.1	Some people who drink water containing trans-1,2-dichloroethylene well in excess of the MCL over many years could experience problems with their liver.
59. Dichloromethane	Zero 0	0.005	Some people who drink water containing dichloromethane in excess of the MCL over many years could have liver problems and may have an increased risk of getting cancer.
60. 1,2-Dichloropropane	Zero 0	0.005	Some people who drink water containing 1,2-dichloropropane in excess of the MCL over many years may have an increased risk of getting cancer.
61. Ethylbenzene	0.7	0.7	Some people who drink water containing ethylbenzene well in excess of the MCL over many years could experience problems with their liver or kidneys.
62. Styrene	0.1	0.1	Some people who drink water containing styrene well in excess of the MCL over many years could have problems with their liver, kidneys, or circulatory system.
63. Tetrachloroethylene	Zero 0	0.005	Some people who drink water containing tetrachloroethylene in excess of the MCL over many years could have problems with their liver, and may have an increased risk of getting cancer.

64. Toluene	1	1	Some people who drink water containing toluene well in excess of the MCL over many years could have problems with their nervous system, kidneys, or liver.
65. 1,2,4-Trichlorobenzene	0.07	0.07	Some people who drink water containing 1,2,4-trichlorobenzene well in excess of the MCL over many years could experience changes in their adrenal glands.
66. 1,1,1-Trichloroethane	0.2	0.2	Some people who drink water containing 1,1,1-trichloroethane in excess of the MCL over many years could experience problems with their liver, nervous system, or circulatory system.
67. 1,1,2-Trichloroethane	0.003	0.005	Some people who drink water containing 1,1,2-trichloroethane well in excess of the MCL over many years could have problems with their liver, kidneys, or immune systems.
68. Trichloroethylene	Zero 0	0.005	Some people who drink water containing trichloroethylene in excess of the MCL over many years could experience problems with their liver and may have an increased risk of getting cancer.
69. Vinyl chloride	Zero 0	0.002	Some people who drink water containing vinyl chloride in excess of the MCL over many years may have an increased risk of getting cancer.
70. Xylenes (total)	10	10	Some people who drink water containing xylenes in excess of the MCL over many years could experience damage to their nervous system.
F. Radioactive Contaminants			
71. Beta/photon emitters	Zero 0	4 mrem/yr	Certain minerals are radioactive and may emit forms of radiation known as photons and beta radiation. Some people who drink water containing beta and photon emitters in excess of the MCL over many years may have an increased risk of getting cancer.
72. Alpha emitters	Zero 0	15 pCi/L	Certain minerals are radioactive and may emit a form of radiation known as alpha radiation. Some people who drink water containing alpha emitters in excess of the MCL over many years may have an increased risk of getting cancer.
73. Combined radium (226 and 228)	Zero 0	5 pCi/L	Some people who drink water containing radium 226 or 228 in excess of the MCL over many years may have an increased risk of getting cancer.
G. Disinfection Byproducts (DBPs): Where disinfection is used in the treatment of drinking water, disinfectants combine with organic and inorganic matter present in water to form chemicals called disinfection byproducts (DBPs). EPA sets standards for controlling the levels of disinfectants and DBPs in drinking water.			

74. Total trihalomethanes (TTHMs)	N/A	0.10/ 0.080	Some people who drink water containing trihalomethanes in excess of the MCL over many years may experience problems with their liver, kidneys, or central nervous system, and may have an increased risk of getting cancer.
75. Haloacetic acids (HAA)	N/A	0.060	Some people who drink water containing haloacetic acids in excess of the MCL over many years may have an increased risk of getting cancer.
76. Bromate	0	0.010	Some people who drink water containing bromate in excess of the MCL over many years may have an increased risk of getting cancer.
77. Chlorite	0.08	1.0	Some infants and young children who drink water containing chlorite in excess of the MCL could experience nervous system effects. Similar effects may occur in fetuses of pregnant women who drink water containing chlorite in excess of the MCL. Some people may experience anemia.
78. Chlorine	4 MRDLG	4.0 MRDL	Some people who use drinking water containing chlorine well in excess of the MRDL could experience irritating effects to their eyes and nose. Some people who drink water containing chlorine well in excess of the MRDL could experience stomach discomfort.
79. Chloramines	4 MRDLG	4.0 MRDL	Some people who use drinking water containing chloramines well in excess of the MRDL could experience irritating effects to their eyes and nose. Some people who drink water containing chloramines well in excess of the MRDL could experience stomach discomfort or anemia.
80a. Chlorine dioxide, where any 2 consecutive daily samples taken at the entrance to the distribution system are above the MRDL	0.8 MRDLG	0.8 MRDL	<p>Some infants and young children who drink water containing chlorine dioxide in excess of the MRDL could experience nervous system effects. Similar effects may occur in fetuses of pregnant women who drink water containing chlorine dioxide in excess of the MRDL. Some people may experience anemia.</p> <p>Add for public notification only: The chlorine dioxide violations reported today are the result of exceedances at the treatment facility only, not within the distribution system that delivers water to consumers. Continued compliance with chlorine dioxide levels within the distribution system minimizes the potential risk of these violations to consumers.</p>

80b. Chlorine dioxide, where one or more distribution system samples are above the MRDL	0.8 MRDLG	0.8 MRDL	<p>Some infants and young children who drink water containing chlorine dioxide in excess of the MRDL could experience nervous system effects. Similar effects may occur in fetuses of pregnant women who drink water containing chlorine dioxide in excess of the MRDL. Some people may experience anemia.</p> <p>Add for public notification only: The chlorine dioxide violations reported today include exceedances of the EPA standard within the distribution system which delivers water to consumers. Violations of the chlorine dioxide standard within the distribution system may harm human health based on short-term exposures. Certain groups, including fetuses, infants, and young children, may be especially susceptible to nervous system effects from excessive chlorine dioxide exposure.</p>
81. Control of DBP precursors (TOC)	None	TT	<p>Total organic carbon (TOC) has no health effects. However, total organic carbon provides a medium for the formation of disinfection byproducts. These byproducts include trihalomethanes (THMs) and haloacetic acids (HAAs). Drinking water containing these byproducts in excess of the MCL may lead to adverse health effects, liver or kidney problems, or nervous system effects, and may lead to an increased risk of getting cancer.</p>
H. Other Treatment Techniques			
75. 82. Acrylamide	Zero 0	TT	<p>Some people who drink water containing high levels of acrylamide over a long period of time could have problems with their nervous system or blood, and may have an increased risk of getting cancer.</p>
76. 83. Epichlorohydrin	Zero 0	TT	<p>Some people who drink water containing high levels of epichlorohydrin over a long period of time could experience stomach problems, and may have an increased risk of getting cancer.</p>
Key:			
MCLG - Maximum contaminant level goal			
MCL - Maximum contaminant level			
NTU - Nephelometric turbidity unit			
TT - Treatment technique			
MFL - Millions of fiber per liter			
Action Level (Lead) = 0.015 mg/L			

Action Level (Copper) = 1.3 mg/L
mrem - millirems per year
ppq - picocuries per liter

(1) For water systems analyzing at least forty (40) samples per month, no more than five percent (5.0%) of the monthly samples may be positive for total coliforms. For systems analyzing fewer than forty (40) samples per month, no more than one (1) sample per month may be positive for total coliforms.

(2) The bacteria detected by heterotrophic plate count (HPC) are not necessarily harmful. HPC is simply an alternative method of determining disinfectant residual levels. The number of such bacteria is an indicator of whether there is enough disinfectant in the distribution system.

(3) SWTR treatment technique violations that involve turbidity exceedances may use the health effects language for turbidity instead.

(4) The bacteria detected by **heterotrophic plate count** (HPC) are not necessarily harmful. HPC is simply an alternative method of determining disinfectant residual levels. The number of such bacteria is an indicator of whether there is enough disinfectant in the distribution system.

(5) The MCL for total trihalomethanes is the sum of the concentrations of the individual trihalomethanes.

(Water Pollution Control Board; 327 IAC 8-2.1-17; filed Nov 20, 2001, 10:20 a.m.: 25 IR 1118; errata filed Feb 22, 2002, 2:01 p.m.: 25 IR 2254)

SECTION 15. 327 IAC 8-2.5 IS ADDED TO READ AS FOLLOWS:

Rule 2.5. Disinfectants and Disinfection

327 IAC 8-2.5-1 Maximum residual disinfectant level goals; disinfectants

Authority: IC 13-13-5-1; IC 13-14-8-2; IC 13-14-8-7; IC 13-18-3-2

Affected: IC 13-12-3-1; IC 13-13-5-2; IC 13-14-9; IC 13-18-11

Sec. 1. MRDLGs for disinfectants are as follows:

<u>Disinfectant Residual</u>	<u>MRDLG (mg/L)</u>
Chlorine	4.0 (as Cl₂)
Chloramines	4.0 (as Cl₂)
Chlorine dioxide	0.8 (as ClO₂)

(Water Pollution Control Board; 327 IAC 8-2.5-1)

327 IAC 8-2.5-2 Maximum contaminant levels; disinfection byproducts

Authority: IC 13-13-5-1; IC 13-14-8-2; IC 13-14-8-7; IC 13-18-3-2

Affected: IC 13-12-3-1; IC 13-13-5-2; IC 13-14-9; IC 13-18-11

Sec. 2. (a) The MCLs for disinfection byproducts are as follows:

<u>Disinfection Byproduct</u>	<u>MCL (mg/L)</u>
Total trihalomethanes (TTHM)	0.080
Haloacetic acids (five) (HAA5)	0.060
Bromate	0.010
Chlorite	1.0

(b) A system that is installing GAC or membrane technology to comply with this section may apply to the commissioner for an extension of up to twenty-four (24) months past the dates in section 4(b) of this rule, but not later than December 31, 2003. In granting the extension, the commissioner shall set a schedule for compliance and may specify any interim measures that the system must take.

(c) The commissioner hereby identifies the following as the best technology, treatment techniques, or other means available for achieving compliance with the maximum contaminant levels for disinfection byproducts identified in subsection (a):

<u>Disinfection Byproduct</u>	<u>Best Available Technology</u>
TTHM	Enhanced coagulation or enhanced softening or GAC10, with chlorine as the primary and residual disinfectant.
HAA5	Enhanced coagulation or enhanced softening or GAC10, with chlorine as the primary and residual disinfectant.
Bromate	Control of ozone treatment process to reduce production of bromate.
Chlorite	Control of treatment processes to reduce disinfectant demand and control of disinfection treatment processes to reduce disinfectant levels.

(Water Pollution Control Board; 327 IAC 8-2.5-2)

327 IAC 8-2.5-3 Maximum residual disinfectant levels

Authority: IC 13-13-5-1; IC 13-14-8-2; IC 13-14-8-7; IC 13-18-3-2

Affected: IC 13-12-3-1; IC 13-13-5-2; IC 13-14-9; IC 13-18-11

Sec. 3. (a) MRDLs are as follows:

<u>Disinfectant Residual</u>	<u>MRDL (mg/L)</u>
Chlorine	4.0 (as Cl ₂)
Chloramines	4.0 (as Cl ₂)
Chlorine dioxide	0.8 (as ClO ₂)

(b) The commissioner hereby identifies the following as the best technology, treatment techniques, or other means available for achieving compliance with the MRDLs identified in subsection (a):

- (1) Control of treatment processes to reduce disinfectant demand.**
- (2) Control of disinfection treatment processes to reduce disinfectant levels.**

(Water Pollution Control Board; 327 IAC 8-2.5-3)

327 IAC 8-2.5-4 General requirements; disinfectant residuals, disinfection byproducts, and disinfection byproducts precursors

Authority: IC 13-13-5-1; IC 13-14-8-2; IC 13-14-8-7; IC 13-18-3-2

Affected: IC 13-12-3-1; IC 13-13-5-2; IC 13-14-9; IC 13-18-11

Sec. 4. (a) The general requirements for disinfectant residuals, disinfection byproducts, and disinfection byproducts precursors are as follows:

(1) A CWS or an NTNCWS, which adds a chemical disinfectant to the water in any part of the drinking water treatment process, shall modify its practices to meet MCLs and MRDLs in sections 2(a) and 3(a) of this rule, respectively, and shall meet the treatment technique requirements for disinfection byproduct precursors in section 9 of this rule.

(2) A TWS that uses chlorine dioxide as a disinfectant or oxidant shall modify its practices to meet the MRDL for chlorine dioxide in section 3(a) of this rule.

(b) Compliance dates for CWSs and NTNCWSs are as follows:

(1) A subpart H system serving a population of ten thousand (10,000) or more individuals shall comply with this section upon the effective date of this rule.

(2) A subpart H system serving a population of fewer than ten thousand (10,000) individuals and a system using only ground water not under the direct influence of surface water shall comply with this section beginning January 1, 2004.

(c) Compliance dates for TWSs are as follows:

(1) A subpart H system serving a population of ten thousand (10,000) or more individuals and using chlorine dioxide as a disinfectant or oxidant shall comply with requirements for chlorine dioxide in this section upon the effective date of this rule.

(2) A subpart H system serving a population of fewer than ten thousand (10,000) individuals and using chlorine dioxide as a disinfectant or oxidant and a system using only ground water not under the direct influence of surface water and using chlorine dioxide as a disinfectant or oxidant shall comply with requirements for chlorine dioxide in this section beginning January 1, 2004.

(d) A CWS or a NTNCWS regulated under subsection (a) must be operated by qualified personnel who meet the requirements specified by 327 IAC 8-12.

(e) Notwithstanding the MRDLs in section 3 of this rule, systems may increase residual disinfectant levels in the distribution system of chlorine or chloramines, but not chlorine dioxide, to a level and for a time necessary to protect public health and to address

specific microbiological contamination problems caused by circumstances, including the following:

- (1) Distribution line breaks.
- (2) Storm water run-off events.
- (3) Source water contamination events.
- (4) Cross-connection events.

(Water Pollution Control Board; 327 IAC 8-2.5-4)

327 IAC 8-2.5-5 Analytical requirements; disinfectant residuals, disinfection byproducts, and disinfection byproducts precursors

Authority: IC 13-13-5-1; IC 13-14-8-2; IC 13-14-8-7; IC 13-18-3-2

Affected: IC 13-12-3-1; IC 13-13-5-2; IC 13-14-9; IC 13-18-11

Sec. 5. (a) Systems shall use only one (1) or more of the analytical methods specified in this subsection. These methods are incorporated by reference and may be obtained as follows:

- (1) EPA Method 552.1 is in Methods for the Determination of Organic Compounds in Drinking Water-Supplement II, U.S. EPA, August 1992, EPA/600/R-92/129 (available through National Information Technical Service (NTIS), PB92-207703).
- (2) EPA Methods 502.2, 524.2, 551.1, and 552.2 are in Methods for the Determination of Organic Compounds in Drinking Water-Supplement III, U.S. EPA, August 1995, EPA/600/R-95/131. (available through NTIS, PB95-261616).
- (3) EPA Methods 300.0 and 150.1 are in Methods for the Determination of Inorganic Substances in Environmental Samples, U.S. EPA, August 1993, EPA/600/R-93/100. (available through NTIS, PB94-121811).
- (4) EPA Method 300.1 is in USEPA Method 300.1, Determination of Inorganic Anions in Drinking Water by Ion Chromatography, Revision 1.0, U.S. EPA, 1997, EPA/600/R-98/118 (available through NTIS, PB98-169196); also available from: Chemical Exposure Research Branch, Microbiological & Chemical Exposure Assessment Research Division, National Exposure Research Laboratory, U.S. Environmental Protection Agency, Cincinnati, Ohio 45268, Fax Number: 513-569-7757, Phone number: 513-569-7586.
- (5) Standard Methods 4500-Cl D, 4500-Cl E, 4500-Cl F, 4500-Cl G, 4500-Cl H, 4500-Cl I, 4500-ClO₂ D, 4500-ClO₂ E, 4500-H⁺ B, 6251 B, and 5910 B shall be followed in accordance with Standard Methods for the Examination of Water and Wastewater, 19th Edition, American Public Health Association, 1995. Copies may be obtained from the American Public Health Association, 1015 Fifteenth Street, NW, Washington, D.C. 20005.
- (6) Standard Methods 5310 B, 5310 C, and 5310 D shall be followed in accordance with the Supplement to the 19th Edition of Standard Methods for the Examination of Water and Wastewater, American Public Health Association, 1996. Copies may be obtained from the American Public Health Association, 1015 Fifteenth Street, NW,

Washington, D.C. 20005.

(7) ASTM Methods D 1253-86 and D1293-95 shall be followed in accordance with the Annual Book of ASTM Standards, Volume 11.01, American Society for Testing and Materials, 1996 edition. Copies may be obtained from the American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, Pennsylvania 19428.

These methods are also available for copying at the Indiana Department of Environmental Management, Office of Water Quality, 100 North Senate Avenue, Room ~~1254~~, 1255, Indianapolis, Indiana ~~46204~~, 46206.

(b) Analytical requirements for disinfection byproducts are as follows:

(1) Systems shall measure disinfection byproducts by the methods, as modified by the footnotes, listed in the following table:

**APPROVED METHODS FOR DISINFECTION BYPRODUCT COMPLIANCE
MONITORING**

Methodology ²	EPA Method	Standard Method	Byproduct Measured ¹			
			TTHM	HAA5	Chlorite ⁴	Bromate
P&T/GC/EICD & PID	502.2 ³		X			
P&T/GC/MS	524.2		X			
LLE/GC/ECD	551.1		X			
LLE/GC/ECD		6251 B		X		
SPE/GC/ECD	552.1			X		
LLE/GC/ECD	552.2			X		
Amperometric Titration		4500-ClO ₂ E			X	
IC	300.0				X	
IC	300.1				X	X

¹X indicates method is approved for measuring specified disinfection byproduct.

²P&T = purge and trap; GC = gas chromatography; EICD = electrolytic conductivity detector; PID = photoionization detector; MS = mass spectrometer; LLE = liquid/liquid extraction; ECD = electron capture detector; SPE = solid phase extractor; IC = ion chromatography.

³If TTHMs are the only analytes being measured in the sample, then a PID is not required.

⁴Amperometric titration may be used for routine daily monitoring of chlorite at the entrance to the distribution system, as prescribed in section 6(b)(2)(A)(i) of this rule. Ion chromatography must be used for routine monthly monitoring of chlorite and additional monitoring of chlorite in the distribution system, as prescribed in section 6(b)(2)(A)(ii) and 6(b)(2)(B) of this rule.

(2) Analysis under this subsection for disinfection byproducts must be conducted by laboratories that have received certification by the commissioner, except as specified under ~~subsection (b)~~ subdivision (3). To receive certification to conduct analyses for the contaminants in section 2(a) of this rule, the laboratory must carry out annual analyses of performance evaluation (PE) samples approved by the commissioner. In these analyses of PE samples, the laboratory must achieve quantitative results within the acceptance limit on a minimum of eighty percent (80%) of the analytes included in each PE sample. The acceptance limit is defined as the ninety-five percent (95%) confidence interval calculated around the mean of the PE study data between a maximum and minimum acceptance limit of plus or minus fifty percent (50%) and plus or minus fifteen percent (15%) of the study mean.

(3) A certified operator or other party as approved by the commissioner shall measure daily chlorite samples at the entrance to the distribution system.

(c) Analytical requirements for disinfectant residuals are as follows:

(1) A system shall measure residual disinfectant concentrations for free chlorine, combined chlorine (chloramines), and chlorine dioxide by the methods listed in the following table:

**APPROVED METHODS FOR DISINFECTANT RESIDUAL COMPLIANCE
MONITORING**

Methodology	Standard Method	ASTM Method	Residual Measured ¹			
			Free Chlorine	Combined Chlorine	Total Chlorine	Chlorine Dioxide
Amperometric Titration	4500-Cl D	D 1253-86	X	X	X	
Low Level Amperometric Titration	4500-Cl E				X	
DPD ² Ferrous Titrimetric	4500-Cl F		X	X	X	
DPD ² Colorimetric	4500-Cl G		X	X	X	
Syringaldazine (FACTS)	4500-Cl H		X			
Iodometric Electrode	4500-Cl I				X	

DPD ²	4500-ClO ₂ D					X
Amperometric Method II	4500-ClO ₂ E					X

¹X indicates method is approved for measuring specified disinfectant residual.

²DPD means N,N-diethyl-4-phenylene diamine .

(2) If approved by the commissioner, a system may also measure residual disinfectant concentrations for chlorine, chloramines, and chlorine dioxide by using DPD colorimetric test kits.

(3) Residual disinfectant concentration may be measured only by a certified operator or a party approved by the commissioner.

(d) Systems required to analyze parameters not included in subsections (b) and (c) shall use the following methods:

(1) All methods allowed in 327 IAC 8-2-45 for measuring alkalinity and pH.

(2) For bromide, EPA Method 300.0 or EPA Method 300.1.

(3) A system shall use one or all of the following methods for TOC:

(A) Standard Method 5310 B (High-Temperature Combustion Method).

(B) Standard Method 5310 C (Persulfate-Ultraviolet or Heated-Persulfate Oxidation Method).

(C) Standard Method 5310 D (Wet-Oxidation Method).

TOC samples may not be filtered prior to analysis. TOC samples must either be analyzed or must be acidified to achieve pH less than two (2.0) by minimal addition of phosphoric or sulfuric acid as soon as practical after sampling, not to exceed twenty-four (24) hours. Acidified TOC samples must be analyzed within twenty-eight (28) days.

(4) ~~SUVA is equal to the UV absorption at two hundred fifty-four (254) nanometers (UV_{254}) (measured in m^{-1}) divided by the dissolved organic carbon (DOC) concentration (measured as milligrams per liter).~~ SUVA means specific ultraviolet absorption at two hundred fifty-four (254) nanometers, an indicator of the humic content of water. It is a calculated parameter obtained by dividing a sample's ultraviolet absorption at a wavelength of two hundred fifty-four (254) nanometers (UV_{254}) (in m^{-1}) by its concentration of dissolved organic carbon (DOC) (in milligrams per liter). In order to determine SUVA, UV_{254} and DOC must be measured separately. When determining SUVA, systems shall use the following methods:

(A) A system shall use one (1) or more of the following methods to measure DOC:

(i) Standard Method 5310 B (High-Temperature Combustion Method).

(ii) Standard Method 5310 C (Persulfate-Ultraviolet or Heated-Persulfate Oxidation Method).

(iii) Standard Method 5310 D (Wet-Oxidation Method).

(B) Prior to analysis under clause (A), DOC samples must be filtered through a forty-five hundredths (0.45) micrometer pore-diameter filter. Water passed through the filter prior to filtration of the sample must serve as the filtered blank. This filtered blank must be analyzed using procedures identical to those used for analysis of the samples and must meet the following criteria:

(i) DOC is less than five-tenths (0.5) milligram per liter.

(ii) DOC samples must be filtered through the forty-five hundredths (0.45) micrometer pore-diameter filter prior to acidification.

(iii) DOC samples must either be analyzed or must be acidified to achieve pH less than two (2.0) by minimal addition of phosphoric or sulfuric acid as soon as practical after sampling, not to exceed forty-eight (48) hours.

(iv) Acidified DOC samples must be analyzed within twenty-eight (28) days.

(C) The following apply to a system required to measure UV_{254} under this subdivision:

(i) A system shall use Method 5910 B (Ultraviolet Absorption Method) to measure ultraviolet absorption at two hundred fifty-four (254) nanometers (UV_{254}). UV absorption must be measured at two hundred fifty-three and seven-tenths (253.7) nanometers (may be rounded off to two hundred fifty-four (254) nanometers).

(ii) Prior to analysis, UV_{254} samples must be filtered through a forty-five hundredths (0.45) micrometer pore-diameter filter.

(iii) The pH of UV_{254} samples may not be adjusted.

(iv) Samples must be analyzed as soon as practical after sampling, not to exceed forty-eight (48) hours.

SUVA must be determined on water prior to the addition of disinfectants/oxidants by the system. DOC and UV_{254} samples used to determine a SUVA value must be taken at the same time and at the same location.

(e) Parameters measured under subsection (d) must be measured by a certified operator or a party approved by the commissioner. (*Water Pollution Control Board; 327 IAC 8-2.5-5*)

327 IAC 8-2.5-6 Monitoring requirements; disinfectant residuals, disinfection byproducts, and disinfection byproducts precursors

Authority: IC 13-13-5-1; IC 13-14-8-2; IC 13-14-8-7; IC 13-18-3-2

Affected: IC 13-12-3-1; IC 13-13-5-2; IC 13-14-9; IC 13-18-11

Sec. 6. (a) General monitoring requirements for disinfectant residuals, disinfection byproducts, and disinfection byproducts precursors are as follows:

- (1) Systems shall take all samples during normal operating conditions.
- (2) Systems may consider multiple wells drawing water from a single aquifer as one (1) treatment plant for determining the minimum number of TTHM and HAA5 samples required.
- (3) Failure to monitor in accordance with the monitoring plan required under subsection (f) is a monitoring violation.
- (4) Failure to monitor will be treated as a violation for the entire period covered by the annual average where compliance is based on a running annual average of monthly or quarterly samples or averages and the system's failure to monitor makes it impossible to determine compliance with MCLs or MRDLs.
- (5) Systems may use only data collected under the provisions of subsection (b) or 40 CFR 141.140 through 40 CFR 141.144* to qualify for reduced monitoring.

(b) Monitoring requirements for disinfection byproducts are as follows:

(1) TTHM and HAA5 monitoring requirements are as follows:

(A) For routine monitoring, systems shall monitor at the frequency indicated in the following table:

ROUTINE MONITORING FREQUENCY FOR TTHM AND HAA5

Type of System	Minimum Monitoring Frequency	Sample Location in the Distribution System
Subpart H system serving at least 10,000 persons	4 water samples per quarter per treatment plant	At least 25% of all samples collected each quarter at locations representing maximum residence time. Remaining samples taken at locations representative of at least average residence time in the distribution system and representing the entire distribution system, taking into account number of persons served, different sources of water, and different treatment methods¹.
Subpart H system serving from 500 to 9,999 persons	1 water sample per quarter per treatment plant	Locations representing maximum residence time¹.

Subpart H system serving fewer than 500 persons	1 sample per year per treatment plant during month of warmest water temperature	Locations representing maximum residence time¹. If the sample (or average of annual samples, if more than one sample is taken) exceeds the MCL, the system must increase monitoring to 1 sample per treatment plant per quarter, taken at a point reflecting the maximum residence time in the distribution system, until the system meets reduced monitoring criteria in clause (D).
System using only ground water not under direct influence of surface water using chemical disinfectant and serving at least 10,000 persons	1 water sample per quarter per treatment plant²	Locations representing maximum residence time¹.
System using only ground water not under direct influence of surface water using chemical disinfectant and serving fewer than 10,000 persons	1 sample per year per treatment plant² during month of warmest water temperature	Locations representing maximum residence time¹. If the sample (or average of annual samples, if more than 1 sample is taken) exceeds the MCL, the system must increase monitoring to 1 sample per treatment plant per quarter, taken at a point reflecting the maximum residence time in the distribution system, until the system meets criteria in clause (D) for reduced monitoring.

¹If a system elects to sample more frequently than the minimum required, at least twenty-five percent (25%) of all samples collected each quarter, including those taken in excess of the required frequency, must be taken at locations that represent the maximum residence time of the water in the distribution system. The remaining samples must be taken at locations representative of at least average residence time in the distribution system.

²Multiple wells drawing water from a single aquifer may be considered one (1) treatment plant for determining the minimum number of samples required.

(B) Systems may reduce monitoring, except as otherwise provided, in accordance with the following table:

REDUCED MONITORING FREQUENCY FOR TTHM AND HAA5

IF YOU ARE A:	AND YOU HAVE MONITORED AT LEAST ONE YEAR AND YOUR:	YOU MAY REDUCE MONITORING TO THIS LEVEL:
Subpart H system serving at least 10,000 persons that has a source water annual average TOC level, before any treatment, # 4.0 mg/L	TTHM annual average #0.040 mg/L and HAA5 annual average #0.030mg/L	1 sample per treatment plant per quarter at distribution system location reflecting maximum residence time
Subpart H system serving from 500 to 9,999 persons that has a source water annual average TOC level, before any treatment, # 4.0 mg/L	TTHM annual average #0.040 mg/L and HAA5 annual average #0.030mg/L	1 sample per treatment plant per year at distribution system location reflecting maximum residence time during month of warmest water temperature. NOTE: Any Subpart H system serving fewer than 500 persons may not reduce its monitoring to less than one sample per treatment plant per year.
System using only ground water not under direct influence of surface water using chemical disinfectant and serving at least 10,000 persons	TTHM annual average #0.040 mg/L and HAA5 annual average #0.030mg/L	1 sample per treatment plant per year at distribution system location reflecting maximum residence time during month of warmest water temperature

System using only ground water not under direct influence of surface water using chemical disinfectant and serving fewer than 10,000 persons	TTHM annual average #0.040 mg/L and HAA5 annual average #0.030mg/L for two consecutive years OR TTHM annual average #0.020 mg/L and HAA5 annual average #0.015mg/L for 1 year	1 sample per treatment plant per 3 year monitoring cycle at distribution system location reflecting maximum residence time during month of warmest water temperature, with the 3 year cycle beginning on January 1 following quarter in which system qualifies for reduced monitoring
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(C) Systems on a reduced monitoring schedule may remain on that reduced schedule as long as the average of all samples taken in the year (for systems that must monitor quarterly) or the result of the sample (for systems that must monitor no more frequently than annually) is no more than sixty-thousandths (0.060) milligram per liter and forty-five thousandths (0.045) milligram per liter for TTHMs and HAA5, respectively. Systems that do not meet these levels shall resume monitoring at the frequency identified in the table contained in clause (A) (minimum monitoring frequency column) in the quarter immediately following the monitoring period in which the system exceeds those levels. For systems using only ground water not under the direct influence of surface water and serving fewer than ten thousand (10,000) persons, if either the TTHM annual average is greater than eighty-thousandths (0.080) milligram per liter or the HAA5 annual average is greater than sixty-thousandth (0.060) milligram per liter, the system shall go to the increased monitoring identified in the table contained in clause (A) (sample location column) in the quarter immediately following the monitoring period in which the system exceeds those levels.

(D) Systems on increased monitoring may return to routine monitoring if, after at least one (1) year of monitoring their TTHM annual average is equal to or less than sixty-thousandths (0.060) milligram per liter and their HAA5 annual average is equal to or less than forty-five thousandths (0.045) milligram per liter.

(E) A system may return to routine monitoring at the commissioner's discretion.

(2) CWSs and NTNCWSs using chlorine dioxide for disinfection or oxidation must conduct monitoring for chlorite as follows:

(A) Routine monitoring is as follows:

(i) Systems shall take daily samples at the entrance to the distribution system. For any daily sample that exceeds the chlorite MCL, the system shall take additional samples in the distribution system the

following day at the locations required by clause (B), in addition to the sample required at the entrance to the distribution system.

(ii) Systems shall take a three (3) sample set each month in the distribution system. The system shall take one (1) sample at each of the following locations:

(AA) Near the first customer.

(BB) At a location representative of average residence time.

(CC) At a location reflecting maximum residence time in the distribution system.

Any additional routine sampling must be conducted in the same manner (as three (3) sample sets, at the specified locations). The system may use the results of additional monitoring conducted under clause (B) to meet the requirement for monitoring in this clause.

(B) On each day following a routine sample monitoring result that exceeds the chlorite MCL at the entrance to the distribution system, the system shall take three (3) chlorite distribution system samples at the following locations:

(i) As close to the first customer as possible.

(ii) In a location representative of average residence time.

(iii) As close to the end of the distribution system as possible.

(C) Monitoring for chlorite may be reduced as follows:

(i) Chlorite monitoring at the entrance to the distribution system required by clause (A)(i) may not be reduced.

(ii) Chlorite monitoring in the distribution system required by clause (A)(ii) may be reduced to one (1) three (3) sample set per quarter after one (1) year of monitoring where no individual chlorite sample taken in the distribution system under clause (A)(ii) has exceeded the chlorite MCL and the system has not been required to conduct monitoring under clause (B). The system may remain on the reduced monitoring schedule unless one (1) of the three (3) individual chlorite samples taken monthly in the distribution system under clause (A)(ii) exceeds the chlorite MCL or the system is required to conduct monitoring under clause (B), at which time the system shall revert to routine monitoring.

(3) Monitoring for bromate is as follows:

(A) CWSs and NTNCWSs using ozone for disinfection or oxidation shall take one (1) sample per month for each treatment plant in the system using ozone. Systems shall take samples monthly at the entrance to the distribution system while the ozonation system is operating under normal conditions.

(B) Systems required to analyze for bromate may reduce monitoring from monthly to once per quarter, if the system demonstrates that the average source water bromide concentration is less than five-hundredths (0.05) milligram per liter based upon representative monthly bromide measurements for one (1) year. The system may remain on reduced bromate monitoring unless the running annual average source water bromide concentration,

computed quarterly, is equal to or greater than five-hundredths (0.05) milligram per liter based upon representative monthly measurements. If the running annual average source water bromide concentration is equal to or greater than five-hundredths (0.05) milligram per liter, the system shall resume routine monitoring required by clause (A).

(c) Monitoring requirements for disinfectant residuals are as follows:

(1) Monitoring for chlorine and chloramines is as follows:

(A) CWSs and NTNCWSs that use chlorine or chloramines shall measure the residual disinfectant level in the distribution system when total coliforms are sampled, as specified in 327 IAC 8-2-8. Subpart H systems may use the results of residual disinfectant concentration sampling conducted under 327 IAC 8-2-8.8(d) for systems which filter, in lieu of taking separate samples.

(B) Monitoring for chlorine or chloramines may not be reduced.

(2) Monitoring for chlorine dioxide is as follows:

(A) CWSs, NTNCWSs, and TWSs that use chlorine dioxide for disinfection or oxidation shall take daily samples at the entrance to the distribution system. For any daily sample that exceeds the MRDL, the system shall take samples in the distribution system the following day at the locations required by clause (D), in addition to the sample required at the entrance to the distribution system.

(B) On each day following a routine sample monitoring result that exceeds the MRDL, the system is required to take three (3) chlorine dioxide distribution system samples.

(i) If chlorine dioxide or chloramines are used to maintain a disinfectant residual in the distribution system, or if chlorine is used to maintain a disinfectant residual in the distribution system and there are no disinfection addition points after the entrance to the distribution system, for example, no booster chlorination, the system shall take three (3) samples as close to the first customer as possible, at intervals of at least six (6) hours.

(ii) If chlorine is used to maintain a disinfectant residual in the distribution system and there are one (1) or more disinfection addition points after the entrance to the distribution system, for example, booster chlorination, the system shall take one (1) sample at each of the following locations:

(AA) As close to the first customer as possible.

(BB) In a location representative of average residence time.

(CC) As close to the end of the distribution system as possible, reflecting maximum residence time in the distribution system.

(C) Chlorine dioxide monitoring may not be reduced.

(d) Monitoring requirements for disinfection byproduct precursors (DBPP) are as follows:

(1) Routine monitoring is required as follows:

(A) Subpart H systems which use conventional filtration treatment, as defined in 327 IAC 8-2-1, shall monitor each treatment plant for TOC no later than the point of combined filter effluent turbidity monitoring and representative of the treated water.

(B) All systems required to monitor under this subdivision shall also monitor for TOC in the source water prior to any treatment at the same time as monitoring for TOC in the treated water. These samples, source water and treated water, are referred to as paired samples.

(C) At the same time as the source water sample is taken, all systems shall monitor for alkalinity in the source water prior to any treatment.

(D) Systems shall take one (1) paired sample and one (1) source water alkalinity sample per month per plant at a time representative of normal operating conditions and influent water quality.

(2) Subpart H systems with an average treated water TOC of less than two and zero-tenths (2.0) milligrams per liter for two (2) consecutive years, or less than one (1.0) milligram per liter for one (1) year, may reduce monitoring for both TOC and alkalinity to one (1) paired sample and one (1) source water alkalinity sample per plant per quarter. The system shall revert to routine monitoring in the month following the quarter when the annual average treated water TOC is greater than or equal to two and zero-tenths (2.0) milligrams per liter.

(e) Systems required to analyze for bromate may reduce bromate monitoring from monthly to once per quarter if the system demonstrates that the average source water bromide concentration is less than five-hundredths (0.05) milligram per liter based upon representative monthly measurements for one (1) year. The system shall continue bromide monitoring to remain on reduced bromate monitoring.

(f) Each system required to monitor under this section shall develop and implement a monitoring plan as follows:

(1) The system shall maintain the plan and make it available for inspection by the commissioner and the general public no later than thirty (30) days following the applicable compliance dates in section 4(b) of this rule.

(2) All Subpart H systems serving more than three thousand three hundred (3,300) people shall submit a copy of the monitoring plan to the commissioner no later than the date of the first report required under section 8 of this rule.

(3) The commissioner may also require any other system to submit a monitoring plan.

(4) After review, the commissioner may require changes in any plan elements.

(5) The plan must include at a minimum the following elements:

(A) Specific locations and schedules for collecting samples for any parameters included in this section.

(B) How the system will calculate compliance with MCLs, MRDLs, and treatment techniques.

(C) If approved for monitoring as a consecutive system, or if providing water to a consecutive system, the sampling plan must reflect the entire distribution system.

***40 CFR 141.140 through 141.144 is incorporated by reference and is available for copying at the Indiana Department of Environmental Management, Office of Water Quality, 100 North Senate Avenue, Room 1255, Indianapolis, Indiana 46206. (*Water Pollution Control Board*; 327 IAC 8-2.5-6)**

327 IAC 8-2.5-7 Compliance requirements; disinfectants and disinfection byproducts

Authority: IC 13-13-5-1; IC 13-14-8-2; IC 13-14-8-7; IC 13-18-3-2

Affected: IC 13-12-3-1; IC 13-13-5-2; IC 13-14-9; IC 13-18-11

Sec. 7. (a) General compliance requirements for disinfectants and disinfection byproducts are as follows:

- (1) Where compliance is based on a running annual average of monthly or quarterly samples or averages and the system fails to monitor for TTHM, HAA5, or bromate, this failure to monitor will be treated as a monitoring violation for the entire period covered by the annual average.**
- (2) Where compliance is based on a running annual average of monthly or quarterly samples or averages and the system's failure to monitor makes it impossible to determine compliance with MRDLs for chlorine and chloramines, this failure to monitor will be treated as a monitoring violation for the entire period covered by the annual average.**
- (3) All samples taken and analyzed under the provisions of this rule must be included in determining compliance, even if that number is greater than the minimum required.**
- (4) If, during the first year of monitoring under section 6 of this rule, any particular quarter's average will cause the running annual average of that system to exceed the MCL, the system is out of compliance at the end of that quarter.**

(b) Compliance requirements for disinfection byproducts are as follows:

(1) Compliance requirements for TTHMs and HAA5 are as follows:

- (A) For systems monitoring quarterly, compliance with MCLs in section 1(b) of this rule will be based on a running annual arithmetic average, computed quarterly, of quarterly arithmetic averages of all samples collected by the system as prescribed by section 6(b)(1) of this rule.**
- (B) For systems monitoring less frequently than quarterly, systems demonstrate MCL compliance if the average of samples taken that year under the provisions of section 6(b)(1) of this rule does not exceed the MCLs in section 1 of this rule. If the average of these samples exceeds the MCL, the system shall increase monitoring to once per quarter per treatment plant. Such a system is not in violation of the MCL until it has completed one (1) year of**

quarterly monitoring, unless the result of fewer than four (4) quarters of monitoring will cause the running annual average to exceed the MCL, in which case the system is in violation at the end of that quarter. Systems required to increase monitoring frequency to quarterly monitoring shall calculate compliance by including the sample that triggered the increased monitoring plus the following three (3) quarters of monitoring.

(C) If the running annual arithmetic average of quarterly averages covering any consecutive four (4) quarter period exceeds the MCL, the system is in violation of the MCL and must notify the public pursuant to 327 IAC 8-2.1-7, in addition to reporting to the commissioner pursuant to section 8 of this rule.

(D) If a public water system fails to complete four (4) consecutive quarters of monitoring, compliance with the MCL for the last four (4) quarter compliance period must be based on an average of the available data.

(2) Compliance requirements for bromate will be based on a running annual arithmetic average, computed quarterly, of monthly samples (or, for months in which the system takes more than one (1) sample, the average of all samples taken during the month) collected by the system as prescribed by section 6(b)(3) of this rule. If the average of samples covering any consecutive four (4) quarter period exceeds the MCL, the system is in violation of the MCL and shall notify the public pursuant to 327 IAC 8-2.1-7, in addition to reporting to the agency pursuant to section 8 of this rule. If a public water system fails to complete twelve (12) consecutive months of monitoring, compliance with the MCL for the last four (4) quarter compliance period must be based on an average of the available data.

(3) Compliance requirements for chlorite will be based on an arithmetic average of each three (3) sample set taken in the distribution system as prescribed by section 6(b)(2)(A)(ii) and 6(b)(2)(B) of this rule. If the arithmetic average of any three (3) sample sets exceeds the MCL, the system is in violation of the MCL and shall notify the public pursuant to 327 IAC 8-2.1-3 through 327 IAC 8-2.1-17, in addition to reporting to the commissioner pursuant to section 8 of this rule.

(c) Compliance requirements for disinfectant residuals are as follows:

(1) Compliance requirements for chlorine and chloramines are as follows:

(A) Compliance will be based on a running annual arithmetic average, computed quarterly, of monthly averages of all samples collected by the system under section 6(c)(1) of this rule. If the average covering any consecutive four (4) quarter period exceeds the MRDL, the system is in violation of the MRDL and must notify the public pursuant to 327 IAC 8-2.1-7, in addition to reporting to the commissioner pursuant to section 8 of this rule.

(B) Where systems switch between the use of chlorine and chloramines for residual disinfection during the year, compliance must be determined by including all monitoring results of both chlorine and chloramines in calculating compliance. Reports submitted pursuant to section 8 of this rule must clearly indicate which residual disinfectant was analyzed for each sample.

(2) Compliance requirements for chlorine dioxide are as follows:

(A) Compliance requirements for acute violations are as follows:

- (i) Compliance will be based on consecutive daily samples collected by the system under section 6(c)(2) of this rule.**
- (ii) If any daily sample taken at the entrance to the distribution system exceeds the MRDL, and on the following day one (1) or more of the three (3) samples taken in the distribution system exceed the MRDL, the system is in violation of the MRDL and must take immediate corrective action to lower the level of chlorine dioxide below the MRDL, and must notify the public pursuant to the procedures for acute health risks in 327 IAC 8-2.1-3 through 327 IAC 8-2.1-17.**
- (iii) Failure to take samples in the distribution system the day following an exceedance of the chlorine dioxide MRDL at the entrance to the distribution system will also be considered an MRDL violation and the system shall notify the public of the violation in accordance with the provisions for acute violations under 327 IAC 8-2.1-7 through 327 IAC 8-2.1-17 in addition to reporting the commissioner pursuant to section 8 of this rule.**

(B) Compliance requirements for nonacute violations are as follows:

- (i) Compliance will be based on consecutive daily samples collected by the system under section 6(c)(2) of this rule.**
- (ii) If any two (2) consecutive daily samples taken at the entrance to the distribution system exceed the MRDL and all distribution system samples taken are below the MRDL, the system is in violation of the MRDL and must take corrective action to lower the level of chlorine dioxide below the MRDL at the point of sampling and will notify the public pursuant to the procedures for nonacute health risks in 327 IAC 8-2.1-7 through 327 IAC 8-2.1-17 in addition to reporting to the commissioner pursuant to section 8 of this rule.**
- (iii) Failure to monitor at the entrance to the distribution system the day following an exceedance of the chlorine dioxide MRDL at the entrance to the distribution system is also an MRDL violation and the system must notify the public of the violation in accordance with the provisions for nonacute violations under 327 IAC 8-2.1-7 in addition to reporting the commissioner pursuant to section 8 of this rule.**

(d) Compliance for disinfection byproduct precursors (DBPP) are as follows:

(1) Compliance will be determined as specified by section 9 of this rule.

(2) Systems may begin monitoring to determine whether Step 1 TOC removals can be met twelve (12) months prior to the compliance date for the system. This monitoring is not required and failure to monitor during this period is not a violation. However, any system that does not monitor during this period, and then determines in the first twelve (12) months after the compliance date that it is not able to meet the Step 1

requirements in section 9(b)(2) of this rule and must therefore apply for alternate minimum TOC removal (Step 2) requirements, is not eligible for retroactive approval of alternate minimum TOC removal (Step 2) requirements as allowed by section 9(b)(3) of this rule, and is in violation.

(3) Systems may apply for alternate minimum TOC removal (Step 2) requirements any time after the compliance date.

(4) For systems required to meet Step 1 TOC removals, if the value calculated under section 9(c)(1)(D) of this rule is less than one (1.00), the system is in violation of the treatment technique requirements and must notify the public pursuant to 327 IAC 8-2.1-17(80)(a) and 327 IAC 8-2.1-17(80)(b), in addition to reporting to the commissioner pursuant to section 8 of this rule.

(Water Pollution Control Board; 327 IAC 8-2.5-7)

327 IAC 8-2.5-8 Reporting and record keeping requirements; disinfectants and disinfection byproducts

Authority: IC 13-13-5-1; IC 13-14-8-2; IC 13-14-8-7; IC 13-18-3-2

Affected: IC 13-12-3-1; IC 13-13-5-2; IC 13-14-9; IC 13-18-11

Sec. 8. (a) Systems required to sample quarterly or more frequently shall report to the commissioner within ten (10) days after the end of each quarter in which samples were collected, notwithstanding the provisions of 327 IAC 8-2.1-7. Systems required to sample less frequently than quarterly report to the commissioner within ten (10) days after the end of each monitoring period in which samples were collected.

(b) For disinfection byproducts, systems must report the information specified in the following table:

IF YOU ARE A:	YOU MUST REPORT:
(1) System monitoring for TTHMs and HAA5 under the requirements of section 6(b) of this rule on a quarterly or more frequent basis:	(i) The number of samples taken during the last quarter. (ii) The location, date, and result of each sample taken during the last quarter. (iii) The arithmetic average of all samples taken in the last quarter. (iv) The annual arithmetic average of the quarterly arithmetic averages of this section for the last four (4) quarters. (v) Whether, based on section 7(b)(1) of this rule, the MCL was violated.

(2) System monitoring for TTHMs and HAA5 under the requirements of section 6(b) of this rule less frequently than quarterly (but at least annually):	<ul style="list-style-type: none"> (i) The number of samples taken during the last year. (ii) The location, date, and result of each sample taken during the last monitoring period. (iii) The arithmetic average of all samples taken over the last year. (iv) Whether, based on section 7(b)(1) of this rule, the MCL was violated.
(3) System monitoring for TTHMs and HAA5 under the requirements of section 6(b) of this rule less frequently than annually:	<ul style="list-style-type: none"> (i) The location, date, and result of the last sample taken. (ii) Whether, based on section 7(b)(1) of this rule, the MCL was violated.
(4) System monitoring for chlorite under the requirements of section 6(b) of this rule:	<ul style="list-style-type: none"> (i) The number of entry point samples taken each month for the last three (3) months. (ii) The location, date, and result of each sample (both entry point and distribution system) taken during the last quarter. (iii) For each month in the reporting period, the arithmetic average of all samples taken in each three sample set taken in the distribution system. (iv) Whether, based on section 7(b)(3) of this rule, the MCL was violated, and in which month, and how many times it was violated each month.
(5) System monitoring for bromate under the requirements of section 6(b) of this rule:	<ul style="list-style-type: none"> (i) The number of samples taken during the last quarter. (ii) The location, date, and result of each sample taken during the last quarter. (iii) The arithmetic average of the monthly arithmetic averages of all samples taken in the last year. (iv) Whether, based on section 7(b)(2) of this rule, the MCL was violated.

(c) For disinfectants, systems shall report the information specified in the following table:

IF YOU ARE A:	YOU MUST REPORT:
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<p>(1) System monitoring for chlorine or chloramines under the requirements of section 6(c) of this rule:</p>	<p>(i) The number of samples taken during each month of the last quarter.</p> <p>(ii) The monthly arithmetic average of all samples taken in each month for the last twelve (12) months.</p> <p>(iii) The arithmetic average of all monthly averages for the last twelve (12) months.</p> <p>(iv) Whether, based on section 7(c)(1) of this rule, the MRDL was violated.</p>
<p>(2) System monitoring for chlorine dioxide under the requirements of section 6(c) of this rule:</p>	<p>(i) The dates, results, and locations of samples taken during the last quarter.</p> <p>(ii) Whether, based on section 7(c)(2) of this rule, the MRDL was violated.</p> <p>(iii) Whether the MRDL was exceeded in any two (2) consecutive daily samples and whether the resulting violation was acute or nonacute.</p>

(d) For disinfection byproduct precursors and enhanced coagulation or enhanced softening, systems shall report the information specified in the following table:

IF YOU ARE A:	YOU MUST REPORT:
<p>(1) System monitoring monthly or quarterly for TOC under the requirements of section 6(d) of this rule and required to meet the enhanced coagulation or enhanced softening requirements in section 9(b)(2) or 9(b)(3) of this rule:</p>	<p>(i) The number of paired (source water and treated water) samples taken during the last quarter.</p> <p>(ii) The location, date, and results of each paired sample and associated alkalinity taken during the last quarter.</p> <p>(iii) For each month in the reporting period that paired samples were taken, the arithmetic average of the percent reduction of TOC for each paired sample and the required TOC percent removal.</p> <p>(iv) Calculations for determining compliance with the TOC percent removal requirements, as provided in section 9(c)(1) of this rule.</p> <p>(v) Whether the system is in compliance with the enhanced coagulation or enhanced softening percent removal requirements in section 9(b) of this rule for the last four (4) quarters.</p>

<p>(2) System monitoring monthly or quarterly for TOC under the requirements of section 6(d) of this rule and meeting one (1) or more of the alternative compliance criteria in section 9(a)(2) or 9(a)(3) of this rule:</p>	<p>(i) The alternative compliance criterion that the system is using.</p> <p>(ii) The number of paired samples taken during the last quarter.</p> <p>(iii) The location, date, and result of each paired sample and associated alkalinity taken during the last quarter.</p> <p>(iv) The running annual arithmetic average based on monthly averages (or quarterly samples) of source water TOC for systems meeting a criterion in section 9(a)(2)(A) or 9(a)(2)(C) of this rule or of treated water TOC for systems meeting the criterion in section 9(a)(2)(B) of this rule.</p> <p>(v) The running annual arithmetic average based on monthly averages (or quarterly samples) of source water SUVA for systems meeting the criterion in section 9(a)(2)(G) of this rule or of treated water SUVA for systems meeting the criterion in section 9(a)(2)(H) of this rule.</p> <p>(vi) The running annual average of source water alkalinity for systems meeting the criterion in section 9(a)(2)(C) of this rule and of treated water alkalinity for systems meeting the criterion in section 9(a)(3)(A) of this rule.</p> <p>(vii) The running annual average for both TTHM and HAA5 for systems meeting the criterion in section 9(a)(2)(C) or 9(a)(2)(F) of this rule.</p> <p>(viii) The running annual average of the amount of magnesium hardness removal (as CaCO₃, in mg/L) for systems meeting the criterion in section 9(a)(3)(B) of this rule.</p> <p>(ix) Whether the system is in compliance with the particular alternative compliance criterion in section 9(a)(2) or 9(a)(3) of this rule.</p>
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(Water Pollution Control Board; 327 IAC 8-2.5-8)

327 IAC 8-2.5-9 Treatment techniques for control of disinfection byproducts precursors

Authority: IC 13-13-5-1; IC 13-14-8-2; IC 13-14-8-7; IC 13-18-3-2

Affected: IC 13-12-3-1; IC 13-13-5-2; IC 13-14-9; IC 13-18-11

Sec. 9. (a) Applicability is as follows:

(1) Subpart H systems using conventional filtration treatment shall operate with enhanced coagulation or enhanced softening to achieve the TOC percent removal levels specified in subsection (b) unless the system meets at least one (1) of the alternative compliance criteria listed in subdivision (2) or (3).

(2) Subpart H systems using conventional filtration treatment may use one (1) or all of the following alternative compliance criteria to comply with this section in lieu of complying with subsection (b):

(A) The system's source water TOC level, measured according to section 5(d)(3) of this rule, is less than two and zero-tenths (2.0) milligrams per liter, calculated quarterly as a running annual average.

(B) The system's treated water TOC level, measured according to section 5(d)(3) of this rule, is less than two and zero-tenths (2.0) milligrams per liter, calculated quarterly as a running annual average.

(C) The system's source water TOC level, measured according to section 5(d)(3) of this rule is less than four and zero-tenths (4.0) milligrams per liter, calculated quarterly as a running annual average and the following are met:

(i) The source water alkalinity, measured according to section 5(d)(1) of this rule, is greater than sixty (60) milligrams per liter (as CaCO₃), calculated quarterly as a running annual average.

(ii) Either of the following:

(AA) The TTHM and HAA5 running annual averages are no greater than forty-thousandths (0.040) milligram per liter and thirty-thousandths (0.030) milligram per liter, respectively; or

(BB) Prior to the effective date for compliance in section 4(b) of this rule, the system has made a clear and irrevocable financial commitment not later than the effective date for compliance in section 4(b) of this rule to use technologies that will limit the levels of TTHMs and HAA5 to no more than forty-thousandths (0.040) milligram per liter and thirty-thousandths (0.030) milligram per liter, respectively. Systems shall submit evidence of a clear and irrevocable financial commitment, in addition to a schedule containing milestones and periodic progress reports for installation and operation of appropriate technologies, to the agency for approval not later than the effective date for compliance in section 4(b) of this rule. These technologies must be installed and operating not later than June 30, 2005.

(D) The TTHM and HAA5 running annual averages are no greater than forty-thousandths (0.040) milligram per liter and thirty-thousandths (0.030) milligram per liter, respectively, and the system uses only chlorine for primary disinfection and maintenance of a residual in the distribution system.

(E) The system's source water SUVA, prior to any treatment and measured monthly according to section 5(d)(4) of this rule, is less than or equal to two and zero-tenths (2.0) liters per milligram meter, calculated quarterly as a running annual average.

(F) The system's finished water SUVA, measured monthly according to section 5(d)(4) of this rule, is less than or equal to two and zero-tenths (2.0) liters per milligram meter, calculated quarterly as a running annual average.

(3) Systems practicing enhanced softening that cannot achieve the TOC removals required by subdivision (b)(2) may use the following alternative compliance criteria in lieu of complying with subsection (b):

- (A) Softening that results in lowering the treated water alkalinity to less than sixty (60) milligrams per liter (as CaCO_3), measured monthly according to section 5(d)(1) of this rule and calculated quarterly as a running annual average.
- (B) Softening that results in removing at least ten (10) milligrams per liter of magnesium hardness (as CaCO_3), measured monthly and calculated quarterly as an annual running average.

Systems shall comply with monitoring requirements in section 6(d) of this rule.

(b) Enhanced coagulation and enhanced softening performance requirements are as follows:

- (1) Systems shall achieve the percent reduction of TOC specified in subdivision (2) between the source water and the combined filter effluent unless the commissioner approves a system's request for alternate minimum TOC removal (Step 2) requirements under subdivision (3).
- (2) Required Step 1 TOC reductions, indicated in the following table, are based upon specified source water parameters measured in accordance with section 6(d) of this rule. Systems practicing softening are required to meet the Step 1 TOC reductions in the far-right column (Source water alkalinity greater than one hundred twenty (120) milligrams per liter) for the specified source water TOC:

Step 1 Required Removal of TOC by Enhanced Coagulation and Enhanced Softening for Subpart H Systems Using Conventional Treatment^{1, 2}

Source-Water TOC, mg/L	Source-Water Alkalinity, mg/L as CaCO_3		
	0-60 (percent)	>60-120 (percent)	>120 ³ (percent)
>2.0-4.0	35.0%	25.0%	15.0%
>4.0-8.0	45.0%	35.0%	25.0%
>8.0	50.0%	40.0%	30.0%

¹Systems meeting at least one (1) of the conditions in subsection (a)(2) are not required to operate with enhanced coagulation.

² Softening systems meeting one (1) of the alternative compliance criteria in subsection (a)(3) are not required to operate with enhanced softening.

³Systems practicing softening shall meet the TOC removal requirements in this column.

- (3) Subpart H conventional treatment systems that cannot achieve the Step 1 TOC removals required by subdivision (2) due to water quality parameters or operational constraints shall apply to the commissioner, within three (3) months of failure to achieve the TOC removals required by subdivision (2), for approval of alternative minimum TOC (Step 2) removal requirements submitted by the system as provided by

subdivision (4). If the commissioner approves the alternative minimum TOC removal (Step 2) requirements, the commissioner may make those requirements retroactive for the purposes of determining compliance. Until the commissioner approves the alternate minimum TOC removal (Step 2) requirements, the system shall meet the Step 1 TOC removals contained in subdivision (2).

(4) Alternate minimum TOC removal (Step 2) requirements are as follows:

(A) Applications made to the commissioner by enhanced coagulation systems for approval of alternate minimum TOC removal (Step 2) requirements under subdivision (3) must include, at a minimum, results of bench-scale or pilot-scale testing conducted under clause (C). The submitted bench-scale or pilot-scale testing will be used to determine the alternate enhanced coagulation level.

(B) As used in this subdivision, “alternate enhanced coagulation level” means coagulation at a coagulant dose and pH as determined by the method described in clauses (A) through (E) such that an incremental addition of ten (10) milligrams per liter of alum (or equivalent amount of ferric salt) results in a TOC removal of less than or equal to three-tenths (0.3) milligram per liter. The percent removal of TOC at this point on the TOC removal versus coagulant dose curve is defined as the minimum TOC removal required for the system. Once approved by the agency, this minimum requirement supersedes the minimum TOC removal required by the table in subdivision (2). This requirement will be effective until the agency approves a new value based on the results of a new bench-scale and pilot-scale tests. Failure to achieve alternative minimum TOC removal levels is a violation of National Primary Drinking Water Regulations.

(C) Bench-scale or pilot-scale testing of enhanced coagulation must be conducted by using representative water samples and adding ten (10) milligrams per liter increments of alum, or equivalent amounts of ferric salt, until the pH is reduced to a level less than or equal to the enhanced coagulation Step 2 target pH shown in the following table:

Enhanced Coagulation Step 2 Target pH

Alkalinity (mg/L as CaCO₃)	Target pH
0-60	5.5
>60-120	6.3
>120-240	7.0
>240	7.5

(D) For waters with alkalinities of less than sixty (60) milligrams per liter for which the addition of small amounts of alum or equivalent addition of iron coagulant drives the pH below five and five-tenths (5.5) before significant TOC

removal occurs, the system shall add necessary chemicals to maintain the pH between five and three-tenths (5.3) and five and seven-tenths (5.7) in samples until the TOC removal of three-tenths (0.3) milligram per liter per ten (10) milligrams per liter alum added, or equivalent addition of iron coagulant, is reached.

(E) The system may operate at any coagulant dose or pH necessary, consistent with other National Primary Drinking Water Regulations, to achieve the minimum TOC percent removal approved under subdivision (3).

(F) If the TOC removal is consistently less than three-tenths (0.3) milligram per liter of TOC per ten (10) milligrams per liter of incremental alum dose at all dosages of alum (or equivalent addition of iron coagulant), the water is deemed to contain TOC not amenable to enhanced coagulation. The system may then apply to the commissioner for a waiver of enhanced coagulation requirements.

(c) Compliance calculations are required as follows:

(1) Subpart H systems other than those identified in ~~subsections~~ subsection (a)(2) or (a)(3) shall comply with requirements contained in ~~subsections~~ subsection (b)(2) or (b)(3). Systems shall calculate compliance quarterly, beginning after the system has collected twelve (12) months of data, by determining an annual average using the following method:

STEP 1: Calculate actual monthly TOC percent removal, which is equal to:

$(1 - (\text{treated water TOC} / \text{source water TOC})) \times \text{one hundred (100)}.$

STEP 2: Calculate the required monthly TOC percent removal (from either the table in subsection (b)(2) or from subsection (b)(3)).

STEP 3: Divide the value determined under STEP 1 by the value determined under STEP 2.

STEP 4: Add together the quotients determined under STEP 3 for the last twelve (12) months and divide by twelve (12).

STEP 5: If the quotient calculated in STEP 4 is less than one and zero-hundredths (1.00), the system is not in compliance with the TOC percent removal requirements.

(2) Systems may use the following provisions in lieu of the calculations in subdivision (1) to determine compliance with TOC percent removal requirements:

(A) In any month that the system's treated or source water TOC level, measured according to section 5(d)(3) of this rule, is less than two and zero-tenths (2.0) milligrams per liter, the system may assign a monthly value of one and zero-tenths (1.0) (in lieu of the value calculated in STEP 3 of subdivision (1)) when calculating compliance under subdivision (1).

(B) In any month that a system practicing softening removes at least ten (10) milligrams per liter of magnesium hardness (as CaCO_3), the system may assign a monthly value of one and zero-tenths (1.0) (in lieu of the value calculated in STEP 3 of subdivision (1)) when calculating compliance under subdivision (1).

(C) In any month that the system's source water SUVA, prior to any treatment

and measured according to section 5(d)(4) of this rule, is less than or equal to two and zero-tenths (2.0) liters per milligram meter, the system may assign a monthly value of one and zero-tenths (1.0) (in lieu of the value calculated in STEP 3 of subdivision (1)) when calculating compliance under subdivision (1).

(D) In any month that the system's finished water SUVA, measured according to section 5(d)(4) of this rule, is less than or equal to two and zero-tenths (2.0) liters per milligram meter, the system may assign a monthly value of one and zero-tenths (1.0) (in lieu of the value calculated in STEP 3 of subdivision (1)) when calculating compliance under subdivision (1).

(E) In any month that a system practicing enhanced softening lowers alkalinity below sixty (60) milligrams per liter (as CaCO₃), the system may assign a monthly value of one and zero-tenths (1.0) (in lieu of the value calculated in STEP 3 of subdivision (1)) when calculating compliance under subdivision (1).

(3) Subpart H systems using conventional treatment may also comply with the requirements of this section by meeting the criteria in ~~subsections~~ subsection (a)(2) or (a)(3).

(d) The commissioner identifies the following as treatment techniques for Subpart H systems to control the level of disinfection byproduct precursors in drinking water treatment and distribution systems:

- (1) Conventional treatment.
- (2) Enhanced coagulation.
- (3) Enhanced softening.

(Water Pollution Control Board; 327 IAC 8-2.5-9)

SECTION 16. 327 IAC 8-2.6 IS ADDED TO READ AS FOLLOWS:

Rule 2.6. Enhanced Filtration and Disinfection

327 IAC 8-2.6-1 General requirements; enhanced filtration and disinfection

Authority: IC 13-13-5-1; IC 13-14-8-2; IC 13-14-8-7; IC 13-18-3-2

Affected: IC 13-12-3-1; IC 13-13-5-2; IC 13-14-9; IC 13-18-11

Sec. 1. (a) Upon the effective date of this rule, unless otherwise specified in this section, all subpart H systems serving a population of at least ten thousand (10,000) individuals shall establish treatment technique requirements in lieu of maximum contaminant levels for the following contaminants:

- (1) *Giardia lamblia*.
- (2) Viruses.
- (3) Heterotrophic plate count bacteria.
- (4) *Legionella*.
- (5) *Cryptosporidium*.
- (6) Turbidity.

The systems shall also provide treatment of their source water that complies with these treatment technique requirements in addition to those identified in 327 IAC 8-2-8.5.

(b) The treatment technique requirements consist of installing and properly operating water treatment processes that reliably achieve the following:

- (1) At least ninety-nine percent (99%) (2-log) removal of *Cryptosporidium* between a point where the raw water is not subject to recontamination by surface water run-off and a point downstream before or at the first customer for filtered systems, or *Cryptosporidium* control under the water shed control plan for unfiltered systems.
- (2) Compliance with the profiling and benchmark requirements under section 2 of this rule.

(c) A public water system subject to the requirements of this section is considered to be in compliance with the requirements of subsections (a) and (b) if it meets the:

- (1) disinfection requirements in 327 IAC 8-2-8.6 and section 2 of this rule; or
- (2) applicable filtration requirements in either 327 IAC 8-2-8.5 or section 3 of this rule and the disinfection requirements in 327 IAC 8-2-8.6 and section 2 of this rule.

(d) Subpart H systems serving a population of greater than ten thousand (10,000) are not permitted to begin construction of uncovered finished water storage facilities after the effective date of this rule. (*Water Pollution Control Board; 327 IAC 8-2.6-1*)

327 IAC 8-2.6-2 Disinfection profiling and benchmarking

Authority: IC 13-13-5-1; IC 13-14-8-2; IC 13-14-8-7; IC 13-18-3-2

Affected: IC 13-12-3-1; IC 13-13-5-2; IC 13-14-9; IC 13-18-11

~~Sec. 2. (a) A public water system subject to the requirements of this section shall meet the following monitoring requirements to determine its TTHM annual average and its HAA5 annual average. A public water system will determine its TTHM annual average using the procedure in subdivision (1) and its HAA5 annual average using the procedure in subdivision (2). The annual average is the arithmetic average of the quarterly averages of four (4) consecutive quarters of monitoring.~~ (a) A public water system subject to the requirements of this section will determine its TTHM annual average using the procedure in subdivision (1) and its HAA5 annual average using the procedure in subdivision (2). The annual average is the arithmetic average of the quarterly averages of four (4) consecutive quarters of monitoring. A public water system subject to the requirements of this section shall meet the following monitoring requirements to determine its TTHM annual average and its HAA5 annual average:

- (1) The TTHM annual average must be the annual average during the same period as is used for the HAA5 annual average. Those subpart H systems serving a population of greater than ten thousand (10,000) individuals that:
 - (A) collected data under 40 CFR 141* must use the results of the samples

collected during the last four (4) quarters of required monitoring under 40 CFR 141.142*;

(B) use grandfathered HAA5 occurrence data that meet the provisions of ~~clause subdivision~~ (2)(B) must use the TTHM data collected at the same time under 327 IAC 8-2-5(a) and 327 IAC 8-2-5.3; and

(C) use HAA5 occurrence data that meet the provisions of ~~clause subdivision~~ (2)(C)(i) must use the TTHM data collected at the same time under 327 IAC 8-2-5(a) and 327 IAC 8-2-5.3.

(2) The HAA5 annual average must be the annual average during the same period as is used for the TTHM annual average. Those subpart H systems serving a population of greater than ten thousand (10,000) individuals that:

(A) collected data under 40 CFR 141* must use the results of the samples collected during the last four (4) quarters of required monitoring under 40 CFR 141.142*;

(B) have collected four (4) quarters of HAA5 occurrence data that meets the routine monitoring sample number and location requirements for TTHM in 327 IAC 8-2-5(a) and 327 IAC 8-2-5.3 and handling and analytical method requirements of 40 CFR 141.142(b)(1)* may use those data to determine whether the requirements of this section apply; and

(C) have not collected four (4) quarters of HAA5 occurrence data that meets the provisions of either clause (A) or (B) by March 16, 1999, must either:

(i) conduct monitoring for HAA5 that meets the routine monitoring sample number and location requirements for TTHM in 327 IAC 8-2-5(a), 327 IAC 8-2-5.3, and handling and analytical method requirements of 40 CFR 141.142(b)(1)* to determine the HAA5 annual average and whether the requirements of subsection (b) apply. This monitoring must be completed so that the applicability determination can be made no later than March 31, 2000; or

(ii) comply with all other provisions of this section as if the HAA5 monitoring had been conducted and the results required compliance with subsection (b).

(3) Subpart H systems serving a population of greater than ten thousand (10,000) individuals may request that the commissioner approve a more representative annual data set than the data set determined under subdivision (1) or (2) for the purpose of determining applicability of the requirements of this section.

(4) The commissioner may require that a system use a more representative annual data set than the data set determined under subdivision (1) or (2) for the purpose of determining applicability of the requirements of this section.

(5) Subpart H systems serving a population of greater than ten thousand (10,000) individuals shall submit data to the commissioner based on the following schedules:

(A) Those subpart H systems serving a population of greater than ten thousand (10,000) individuals that collected TTHM and HAA5 data under 40 CFR 141*, as required by subdivisions (1)(A) and (2)(A), shall submit the results of the

samples collected during the last twelve (12) months of monitoring required under 40 CFR 141.142* not later than December 31, 1999.

(B) Those subpart H systems serving a population of greater than ten thousand (10,000) individuals that have collected four (4) consecutive quarters of HAA5 occurrence data that meets the routine monitoring sample number and location for TTHM in 327 IAC 8-2-5(a), 327 IAC 8-2-5.3, and handling and analytical method requirements of 40 CFR 141.142(b)(1)*, as allowed by ~~clause~~ subdivisions (1)(B) and (2)(B), must submit those data to the commissioner not later than April 15, 1999. Until the commissioner has approved the data, the system shall conduct monitoring for HAA5 using the monitoring requirements specified under ~~clause-subdivision~~ (2)(C).

(C) Subpart H systems serving a population of greater than ten thousand (10,000) individuals that conduct monitoring for HAA5 using the monitoring requirements specified by ~~clause-subdivision~~ (2)(C)(i), shall submit TTHM and HAA5 data not later than March 31, 2000.

(D) Those systems that elect to comply with all other provisions of this section as if the HAA5 monitoring had been conducted and the results required compliance with this section, as allowed under ~~clause-subdivision~~ (2)(C)(ii), shall notify the commissioner in writing of their election not later than December 31, 1999.

(E) If the system elects to represent that the commissioner approve a more representative annual data set than the data set determined under ~~clause~~ subdivision (2)(A), the system must submit this request in writing not later than December 31, 1999.

(6) Any subpart H systems serving a population of greater than ten thousand (10,000) individuals having either a TTHM annual average greater than or equal to sixty-four thousandths (0.064) milligram per liter or an HAA5 annual average greater than or equal to forty-eight thousandths (0.048) milligram per liter during the period identified in subdivisions (1) and (2) shall comply with subsection (b).

(b) Disinfection profiling requirements are as follows:

(1) Any subpart H system serving a population of greater than ten thousand (10,000) individuals that meets the criteria in subsection (a)(6) shall develop a disinfection profile of its disinfection practice for a period of up to three (3) years.

(2) Not later than April 1, 2000, subpart H systems serving a population of greater than ten thousand (10,000) individuals shall monitor daily for a period of twelve (12) consecutive calendar months to determine the total logs of inactivation for each day of operation based on the CT99.9 values in Tables 1.1 through 1.6, 2.1, and 3.1 of 40 CFR 141.74(b)*, as appropriate, through the entire treatment plant. At a minimum, subpart H systems serving a population of greater than ten thousand (10,000) individuals with a single or multiple point of disinfectant application prior to entrance to the distribution system shall conduct the monitoring in clauses (A) through (D) for each disinfection segment. The system shall monitor the parameters necessary to determine the total

inactivation ratio using analytical methods in 327 IAC 8-2-8.7 as follows:

(A) The temperature of the disinfection water shall be measured one (1) time per day at each residual disinfectant concentration sampling point during peak hourly flow.

(B) If the system uses chlorine, the pH of the disinfected water shall be measured one (1) time per day at each chlorine residual disinfectant concentration sampling point during peak hourly flow.

(C) The disinfectant contact time (T) shall be determined for each day during peak hourly flow.

(D) The residual disinfectant concentration (C) of the water before or at the first customer and prior to each additional point of disinfection shall be measured each day during peak hourly flow.

(3) In lieu of the monitoring conducted under subdivision (2) to develop the disinfection profile, subpart H systems serving a population of greater than ten thousand (10,000) individuals may elect to meet either of the following requirements:

(A) Not later than March 31, 2000, subpart H systems serving a population of greater than ten thousand (10,000) individuals that has three (3) years of existing operational data may submit those data, a profile generated using those data, and a request that the commissioner approve use of those data in lieu of monitoring under subdivision (2). The commissioner shall determine whether these operational data are substantially equivalent to data collected under subdivision (2) and whether these data are representative of Giardia lamblia inactivation through the entire treatment plant and not just of certain treatment segments. Until the commissioner approves this request, the system is required to conduct monitoring under subdivision (2).

(B) In addition to the disinfection profile generated under subdivision (2), subpart H systems serving a population of greater than ten thousand (10,000) individuals that has existing operational data may use those data to develop a disinfection profile for additional years. Subpart H systems serving a population of greater than ten thousand (10,000) may use these additional yearly disinfection profiles to develop a benchmark under subsection (c). The commissioner shall determine whether these operational data are substantially equivalent to data collected under subdivision (2). These data must also be representative of inactivation through the entire treatment plant and not just of certain treatment segments.

(4) Subpart H systems serving a population of greater than ten thousand (10,000) individuals shall calculate the total inactivation ratio as follows:

(A) If the system uses only one (1) point of disinfectant application, the system may determine the total inactivation ratio for the disinfection segment by using either of the following methods:

(i) Determine one (1) inactivation ratio ($CT_{calc}/CT_{99.9}$) before or at the first customer during peak hourly flow.

(ii) Determine successive $CT_{calc}/CT_{99.9}$ values, representing sequential

inactivation ratios, between the point of disinfectant application and a point before or at the first customer during peak hourly flow. Under this alternative, the system must calculate the total inactivation ratio by determining $(CT_{calc}/CT_{99,9})$ for each sequence and then adding the $(CT_{calc}/CT_{99,9})$ values together to determine $(\sum (CT_{calc}/CT_{99,9}))$.

(B) Subpart H systems serving a population of greater than ten thousand (10,000) individuals that use more than one (1) point of disinfectant application before the first customer shall determine the CT value of each disinfection segment immediately prior to the next point of disinfectant application, or for the final segment, before or at the first customer, during peak hourly flow. The $(CT_{calc}/CT_{99,9})$ value of each segment and $(\sum (CT_{calc}/CT_{99,9}))$ shall be calculated using the method in clause (A).

(C) Subpart H systems serving a population of greater than ten thousand (10,000) individuals shall determine the total logs of inactivation by multiplying the value calculated in clause (A) or (B) by three and zero-tenths (3.0).

(5) Subpart H systems serving a population of greater than ten thousand (10,000) individuals that use either chloramines or ozone for primary disinfection shall also calculate the logs of inactivation for viruses using a method approved by the commissioner.

(6) Subpart H systems serving a population of greater than ten thousand (10,000) individuals shall retain disinfection profile data in graphic form, as a spreadsheet, or in some other format acceptable to the commissioner for review as part of sanitary surveys conducted by the commissioner.

(c) Disinfection benchmarking requirements are as follows:

(1) A Subpart H system serving a population of greater than ten thousand (10,000) individuals required to develop a disinfection profile under subsections (a) and (b) that decides to make a significant change to its disinfection practice shall consult with the commissioner prior to making such change. As used in this subdivision, “significant changes” means the following:

(A) Changes to the point of disinfection.

(B) Changes to the disinfectants used in the treatment plant.

(C) Changes to the disinfection process.

(D) Any other modification identified by the commissioner.

(2) A subpart H system serving a population of greater than ten thousand (10,000) individuals that is modifying its disinfection practice shall calculate its disinfection benchmark using the following procedures:

(A) Subpart H systems serving a population of greater than ten thousand (10,000) individuals shall determine the lowest average monthly *Giardia lamblia* inactivation for each year of profiling data collected and calculated under subsection (b). The system shall determine the average *Giardia lamblia* inactivation for each calendar month for each year of profiling data by dividing the sum of daily *Giardia lamblia* inactivation by the number of values calculated

for that month.

(B) The disinfection benchmark is the lowest monthly average value (for subpart H systems serving a population of greater than ten thousand (10,000) with one (1) year of profiling data) or average of lowest monthly average values (for subpart H systems serving a population of greater than ten thousand (10,000) individuals with more than one (1) year of profiling data) of the monthly logs of *Giardia lamblia* inactivation for each year of profiling data.

(C) Subpart H systems serving a population of greater than ten thousand (10,000) individuals that use either chloramines or ozone for primary disinfection shall also calculate the disinfection benchmark for viruses using a method approved by the commissioner.

(D) The system shall submit the following information to the commissioner as part of its consultation process:

- (i) A description of the proposed change in disinfection practice.
- (ii) The disinfection profile for *Giardia lamblia* (and, if necessary, viruses) under subsection (b) and benchmark as required by this subsection.
- (iii) An analysis of how the proposed change will affect the current levels of disinfection.

***40 CFR 141, 40 CFR 141.142, 40 CFR 141.142(b)(1), and 40 CFR 141.74(b) are incorporated by reference and are available for copying at the Indiana Department of Environmental Management, Office of Water Quality, 100 North Senate Avenue, Room 1255, Indianapolis, Indiana 46206. (*Water Pollution Control Board; 327 IAC 8-2.6-2*)**

327 IAC 8-2.6-3 Enhanced filtration

Authority: IC 13-13-5-1; IC 13-14-8-2; IC 13-14-8-7; IC 13-18-3-2

Affected: IC 13-12-3-1; IC 13-13-5-2; IC 13-14-9; IC 13-18-11

Sec. 3. By December 31, 2001, subpart H systems serving a population of greater than ten thousand (10,000) individuals shall provide treatment consisting of both disinfection, as specified in 327 IAC 8-2-8.6, and filtration treatment that complies with the following:

(1) Requirements for systems using conventional filtration or direct filtration are as follows:

(A) For Subpart H systems serving a population of greater than ten thousand (10,000) individuals using conventional filtration or direct filtration, the turbidity level of representative samples of the system's filtered water must be less than or equal to three-tenths (0.3) nephelometric turbidity unit in at least ninety-five percent (95%) of the measurements taken each month, measured as specified in 327 IAC 8-2-8.7 and 327 IAC 8-2-8.8.

(B) The turbidity level of representative samples of the system's filtered water must at no time exceed one (1) nephelometric turbidity unit, measured as specified in 327 IAC 8-2-8.7 and 327 IAC 8-2-8.8.

(C) A system that uses lime softening may acidify representative samples prior to analysis using a protocol approved by the commissioner.

(2) A Subpart H system serving a population greater than ten thousand (10,000) may use filtration technologies other than conventional filtration treatment, direct filtration, slow sand filtration, or diatomaceous earth filtration if it demonstrates to the commissioner, using pilot plant studies or other means, that the alternative filtration technology, in combination with disinfection treatment that meets the requirements of ~~327 IAC 8-2-5-8.6~~ 327 IAC 8-2-8.6, consistently achieves ninety-nine and nine-tenths percent (99.9%) removal or inactivation of *Giardia lamblia* cysts and ninety-nine and ninety-nine hundredths percent (99.99%) removal or inactivation of viruses, and ninety-nine percent (99%) removal of *Cryptosporidium* oocysts, and the commissioner approves the use of the filtration technology.

(3) For each approval under subdivision (2), the commissioner will set turbidity performance requirements that the system must meet at least ninety-five percent (95%) of the time and that the system may not exceed at any time at a level that consistently achieves ninety-nine and nine-tenths percent (99.9%) removal or inactivation of *Giardia lamblia* cysts, ninety-nine and ninety-nine hundredths percent (99.99%) removal or inactivation of viruses, and ninety-nine percent (99%) removal of *Cryptosporidium* oocysts.

(Water Pollution Control Board; 327 IAC 8-2.6-3)

327 IAC 8-2.6-4 Filtration sampling requirements

Authority: IC 13-13-5-1; IC 13-14-8-2; IC 13-14-8-7; IC 13-18-3-2

Affected: IC 13-12-3-1; IC 13-13-5-2; IC 13-14-9; IC 13-18-11

Sec. 4. (a) In addition to monitoring required by 327 IAC 8-2-8.7, a Subpart H system serving a population of greater than ten thousand (10,000) individuals that provides conventional filtration treatment or direct filtration shall comply with the following:

- (1) Conduct continuous monitoring of turbidity for each individual filter using an approved method in 327 IAC 8-2-8.7.
- (2) Calibrate turbidimeters using the procedure specified by the manufacturer.
- (3) Record the results of individual filter monitoring every fifteen (15) minutes.

(b) If there is a failure in the continuous turbidity monitoring equipment, Subpart H systems serving a population of greater than ten thousand (10,000) individuals must conduct grab sampling every four (4) hours in lieu of continuous monitoring, but for no more than five (5) working days following the failure of the equipment. *(Water Pollution Control Board; 327 IAC 8-2.6-4)*

327 IAC 8-2.6-5 Enhanced filtration and disinfection reporting and record keeping requirements

Authority: IC 13-13-5-1; IC 13-14-8-2; IC 13-14-8-7; IC 13-18-3-2

Affected: IC 13-12-3-1; IC 13-13-5-2; IC 13-14-9; IC 13-18-11

Sec. 5. Beginning January 1, 2002, a Subpart H system serving a population of greater than ten thousand (10,000) individuals that is subject to the requirements of section 3 of this rule and provides conventional filtration treatment or direct filtration shall meet the following requirements in addition to the reporting and record keeping requirements in 327 IAC 8-2-14:

(1) Turbidity measurements as required by section 3 of this rule shall be reported within ten (10) days after the end of each month the system serves water to the public.

Information that shall be reported includes the following:

(A) The total number of filtered water turbidity measurements taken during the month.

(B) The number and percentage of filtered water turbidity measurements taken during the month which are less than or equal to the turbidity limits specified in section 3 of this rule.

(C) The date and value of any turbidity measurements taken during the month that exceed:

(i) one and zero-tenths (1.0) nephelometric turbidity unit for systems using conventional filtration treatment or direct filtration; or

(ii) the maximum level set by the commissioner under section 3 of this rule. This reporting requirement is in lieu of the reporting specified in 327 IAC 8-2-14(b).

(2) Subpart H systems serving a population of greater than ten thousand (10,000) individuals shall maintain the results of individual filter monitoring taken under section 4 of this rule for at least three (3) years. These systems shall report that they have conducted individual filter turbidity monitoring under section 3 of this rule within ten (10) days after the end of each month they serve water to the public if measurements demonstrate one (1) or more of the following conditions:

(A) For any individual filter that has a measured turbidity level of greater than one and zero-tenths (1.0) nephelometric turbidity unit in two (2) consecutive measurements taken fifteen (15) minutes apart, subpart H systems serving a population of greater than ten thousand (10,000) individuals shall report the filter number, the turbidity measurement, and the date on which the exceedance occurred. In addition, the system shall either produce a filter profile for the filter within seven (7) days of the exceedance, if the system is not able to identify an obvious reason for the abnormal filter performance, and report that the profile has been produced or report the obvious reason for the exceedance.

(B) For any individual filter that has a measured turbidity level of greater than five-tenths (0.5) in two (2) consecutive measurements taken fifteen (15) minutes apart at the end of the first four (4) hours of continuous filter operation after the filter has been backwashed or otherwise taken off-line, subpart H systems serving a population of greater than ten thousand (10,000) individuals shall report the filter number, the turbidity, and the date on which the exceedance occurred. In addition, the system shall either produce a filter profile for the filter within seven (7) days of the exceedance, if the system is not able to identify an obvious reason for the abnormal filter performance, and report that

the profile has been produced or report the obvious reason for the exceedance. (C) For any individual filter that has a measured turbidity level of greater than one and zero-tenths (1.0) nephelometric turbidity unit in two (2) consecutive measurements taken fifteen (15) minutes apart at any time in each of three (3) consecutive months, subpart H systems serving a population of greater than ten thousand (10,000) shall report the filter number, the turbidity measurement, and the date on which the exceedance occurred. In addition, the system shall conduct a self-assessment of the filter within fourteen (14) days of the exceedance and report that the self-assessment was conducted. The self-assessment shall consist of at least the following components:

- (i) Assessment of filter performance.
- (ii) Development of a filter profile.
- (iii) Identification and prioritization of factors limiting filter performance.
- (iv) Assessment of the applicability of corrections.
- (v) Preparation of a filter self-assessment report.

(D) For any individual filter that has a measured turbidity level of greater than two and zero-tenths (2.0) nephelometric turbidity units in two (2) consecutive measurements taken fifteen (15) minutes apart at any time in each of two (2) consecutive months, subpart H systems serving a population of greater than ten thousand (10,000) individuals shall report the filter number, the turbidity measurement, and the date on which the exceedance occurred. In addition, the system shall arrange for the conduct of a comprehensive performance evaluation by the commissioner or a third party approved by the commissioner no later than thirty (30) days following the exceedance and have the evaluation completed and submitted to the commissioner no later than ninety (90) days following the exceedance.

(3) Additional reporting requirements are as follows:

(A) If at any time the turbidity exceeds one and zero-tenths (1.0) nephelometric turbidity unit in representative samples of filtered water in a subpart H system serving a population of greater than ten thousand (10,000) individuals using conventional filtration treatment or direct filtration, the system shall inform the commissioner as soon as possible, but no later than the end of the next business day.

(B) If at any time the turbidity in representative samples of filtered water exceeds the maximum level set by the commissioner under section 3 of this rule for filtration technologies other than conventional filtration treatment, direct filtration, slow sand filtration, or diatomaceous earth filtration, subpart H systems serving a population of greater than ten thousand (10,000) individuals shall inform the commissioner as soon as possible, but no later than the end of the next business day.

Systems that use lime softening may apply to the commissioner for alternative exceedance levels for the levels specified in ~~subdivisions~~ subdivision (2) and (3) this subdivision if they can demonstrate that higher turbidity levels in individual filters are

due to lime carryover only and not due to degraded filter performance.
(*Water Pollution Control Board; 327 IAC 8-2.6-5*)

327 IAC 8-2.6-6 Filter backwash

Authority: IC 13-13-5-1; IC 13-14-8-2; IC 13-14-8-7; IC 13-18-3-2

Affected: IC 13-12-3-1; IC 13-13-5-2; IC 13-14-9; IC 13-18-11

Sec. 6. All subpart H systems that employ conventional filtration or direct filtration treatment and recycle spent filter backwash water, thickener supernatant, or liquids from dewatering processes shall meet the following requirements:

(1) A system shall notify the commissioner in writing by December 8, 2003, if the system recycles spent filter backwash water, thickener supernatant, or liquids from dewatering processes. This notification shall include, at a minimum, the following information:

(A) A plant schematic showing:

- (i) the origin of all flows which are recycled, including, but not limited to, spent filter backwash water, thickener supernatant, and liquids from dewatering processes;**
- (ii) the hydraulic conveyance used to transport the spent filter backwash water, thickener supernatant, and liquids from dewatering processes; and**
- (iii) the location where spent filter backwash water, thickener supernatant, and liquids from dewatering processes are reintroduced back into the treatment plant.**

(B) Typical recycle flow in gallons per minute.

(C) The highest observed plant flow experienced in the previous year in gallons per minute.

(D) Design flow for the treatment plant in gallons per minute.

(E) Commissioner-approved operating capacity for the plant where the commissioner has made such determinations.

(2) Any system that recycles spent filter backwash water, thickener supernatant, or liquids from dewatering processes shall return these flows through the processes of a system's existing conventional or direct filtration system as defined in 327 IAC 8-2-1(14) and 327 IAC 8-2-1(18), or at an alternate location approved by the commissioner by June 8, 2004. If capital improvements are required to modify the recycle location to meet the requirement in this subdivision, all capital improvements shall be completed no later than June 8, 2006.

(3) Subpart H systems shall collect and retain on file the following recycle flow information on forms provided by the department for review and evaluation by the commissioner beginning June 8, 2004:

(A) Copy of the recycle notification and information submitted to the commissioner under subdivision (1)(B) through ~~subdivision (1)(E)~~.

- (B) List of all recycle flows and the frequency with which they are returned.**
- (C) Average and maximum backwash flow rate through the filters and the average and maximum duration of the filter backwash process in minutes.**
- (D) Typical filter run length and a written summary of how filter run length is determined.**
- (E) The type of treatment provided for the recycle flow.**
- (F) Data on the physical dimensions of the equalization and treatment units, typical and maximum hydraulic loading rates, type of treatment chemicals used and average dose and frequency of use, and frequency at which solids are removed, if applicable.**

(Water Pollution Control Board; 327 IAC 8-2.6-6)

SECTION 17. 327 IAC 8-2-29 IS REPEALED.